

# **Nuclear Energy**

**Department of Energy**  
**FY 1998 Budget Request to Congress**  
(discretionary dollars in thousands)

	FY 1996 Current Appropriation	FY 1996 Comparable Appropriation	FY 1997 Current Appropriation	FY 1997 Comparable Appropriation	FY 1998 Request
<b>Nuclear Energy</b>					
Nuclear energy research and development					
Light water reactor	39,119	39,119	38,000	38,000	—
Advanced radioisotope power system	48,402	48,402	38,810	38,810	47,000
Nuclear technology research and development	—	—	20,000	—	—
Policy and management	5,000	—	—	—	—
Oak Ridge landlord	14,400	14,400	11,520	11,520	9,500
Test reactor area landlord	3,900	2,000	3,000	2,000	3,217
Advanced test reactor fusion irradiation	2,282	2,282	800	800	2,000
University reactor fuel assistance and support	3,492	3,492	4,000	4,000	6,000
Nuclear energy security	—	—	—	—	39,761
Total, Nuclear energy research and development	116,595	109,695	116,130	95,130	107,478
Termination costs	79,806	78,911	79,100	79,100	76,035
Uranium programs	—	83,314	—	56,466	79,135
Isotope support	24,658	24,658	12,704	12,704	21,704
Program direction	8,000	15,117	14,800	14,800	16,700
Subtotal, Nuclear Energy	229,059	311,695	222,734	258,200	301,052
Use of prior year balances	-4,856	-31,264	-3,065	-20,331	-3,535
Total, Nuclear Energy	224,203	280,431	219,669	237,869	297,517
<b>Energy Assets Acquisition</b>					
Test reactor area landlord	—	1,900	—	1,000	10,850
Uranium programs	—	7,000	—	4,000	22,300
Total, Energy Assets Acquisition	—	8,900	—	5,000	33,150

**DEPARTMENT OF ENERGY  
FY 1998 BUDGET REQUEST  
OFFICE OF NUCLEAR ENERGY, SCIENCE AND TECHNOLOGY**

*Executive Budget Summary*

---

The DOE Office of Nuclear Energy, Science and Technology (NE) represents the core of the Federal Government's expertise in nuclear technology. This expertise is critical to assuring the ability of the United States Government to respond to issues related to nuclear technology, including energy resource issues, matters of national security, nuclear safety, and research and development. The United States relies on nuclear energy technology to provide more than a fifth of its electricity, to provide critical isotopes for health care and industry, and to help assure the national defense. Many other countries in the world are even more reliant on nuclear energy, and we expect that nuclear energy will continue to become increasingly important as the next century unfolds. Because of our reliance on this vital technology for our economic, energy, and national security, the Department of Energy continues to invest in services, products, and technologies that cannot be found in private sector.

Working with industry, academia, the national laboratories, and others, the Office has established a series of primary goals--all of which have their roots in the Department's strategic plan--that guide our activities:

- ▶ Cooperate with others to improve the safety of nuclear activities internationally
- ▶ Cooperate and coordinate with other Departmental offices and government agencies in the implementation of U.S. non-proliferation policy to stop weapons-grade plutonium production in Russia and to conduct highly enriched uranium transparency activities
- ▶ Ensure a reliable supply of medical, research, and industrial isotopes consistent with customer needs

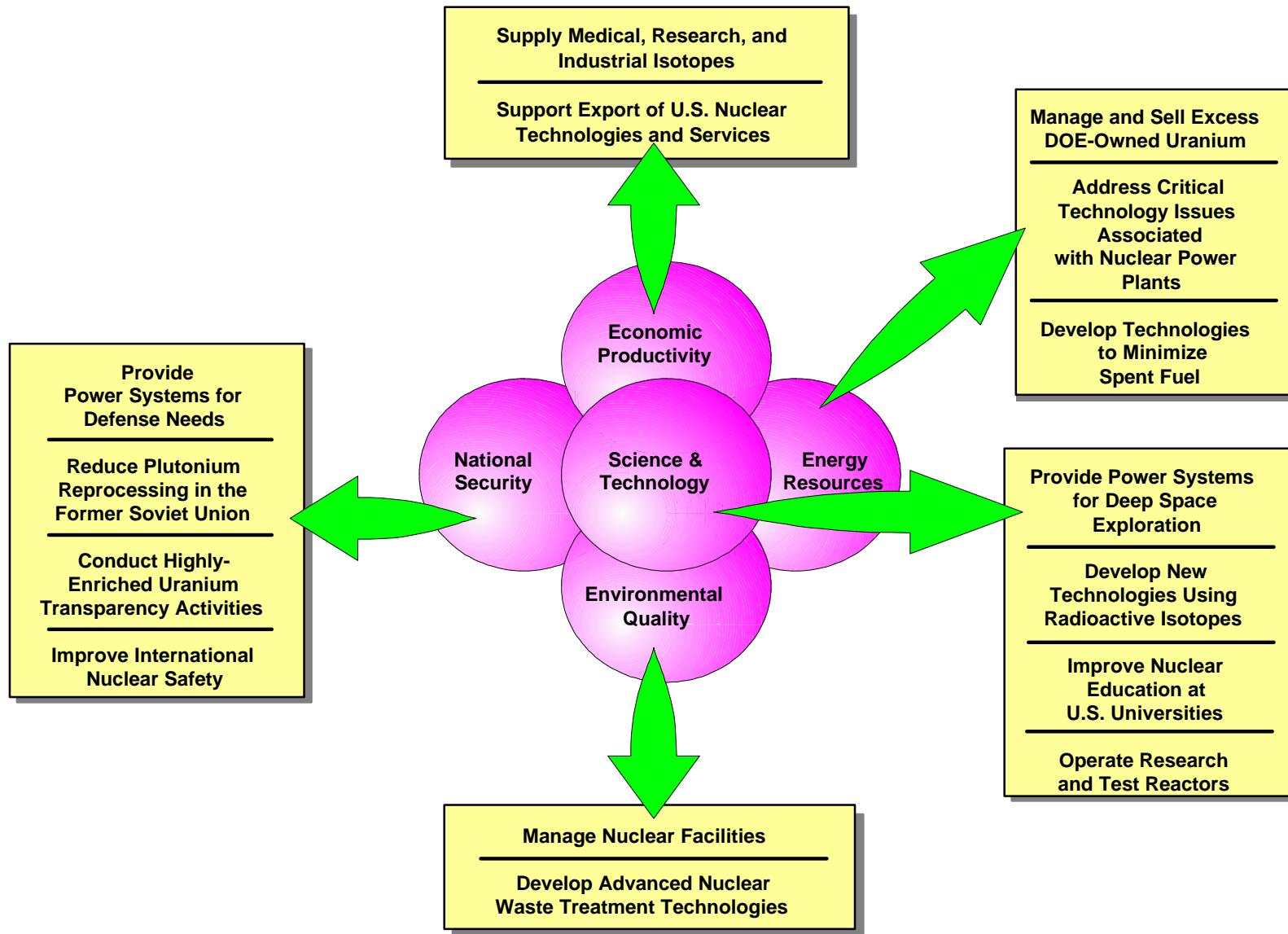
---

**Mission**

- 
- ▶ Provide compact, safe nuclear power systems and related technologies to space and national security customers and develop new technologies using radioactive isotopes
  - ▶ Develop advanced nuclear technologies to address issues critical to existing nuclear power plants
  - ▶ Manage NE facilities and Office of Energy Research (ER) research reactors in a safe, economic, and environmentally-sound manner
  - ▶ Contribute to the U.S. nuclear education infrastructure
  - ▶ Foster U.S. industrial competitiveness through technology transfer and increased exports of nuclear goods and services
  - ▶ Develop advanced fuel for existing nuclear power plants to reduce spent fuel waste and improve the economic of nuclear power plants
  - ▶ Develop new nuclear waste treatment technologies
  - ▶ Sell excess DOE-owned uranium

In addition, NE will meet or exceed National Performance Review objectives to make government more effective, efficient, and responsive.

NE programs and strategic goals relate to the Department's Strategic Plan in all five Business Lines and fully support the Department's critical success factors, as shown on the next page.



*NE Goals Support the Department of Energy Mission*

## Strategy

In accomplishing its programs, the Office of Nuclear Energy, Science and Technology will engage other countries, international organizations, national laboratories, U.S. universities, and U. S. industry in cooperative and collaborative efforts to conduct the activities necessary to accomplish Department of Energy goals. The major program elements that contribute to the mission are: International Nuclear Safety, Nuclear Security, Chernobyl Shutdown Initiative, Uranium Programs, Isotope

Production and Distribution, Termination, Advanced Radioisotope, Nuclear Energy Security, University Research Support, Oak Ridge Landlord, TRA Landlord, ATR Fusion Irradiation, and Program Direction. Program accomplishments which will enable NE to achieve it's mission are identified in the detailed program budget submissions. Programs that make up the NE budget are funded in the accounts shown below:

<b><i>Budget Operating Unit (Account)</i></b>	<b><i>FY 1996</i></b>	<b><i>FY 1997</i></b>	<b><i>FY 1998</i></b>
<b><u>Energy Supply R&amp;D</u></b>			
Nuclear Energy R&D	\$128,635	\$112,726	\$124,178
Termination	\$78,911	\$79,100	\$76,035
Isotope Support	\$24,658	\$12,704	\$21,704
Uranium Programs	\$0	\$0	\$79,135
Nuclear Technology R&D	\$0	\$20,000	\$0
<b><u>Energy Asset Acquisition</u></b>			
Uranium Programs	\$0	\$0	\$22,300
TRA Landlord	\$0	\$0	\$10,850
<b><u>Uranium Supply and Enrichment Activities</u></b>			
Uranium Programs (Gross)	\$90,314	\$60,466	\$0
<b><u>Other Defense Activities (Nuclear Energy Defense)</u></b>			
Nuclear Technology R&D	\$0	\$0	\$25,000
International Nuclear Safety	\$79,030 <sup>1</sup>	\$45,000	\$50,000
Nuclear Security	\$0	\$3,500	\$4,000
Chernobyl Shutdown Initiative	\$0	\$0 <sup>1</sup>	\$2,000
<b><u>Defense Environmental Restoration and Waste Management (Tech. Development)</u></b>			
Nuclear Technology R&D	\$25,000	\$0	\$0
<b>Total, All Accounts (Gross)</b>	<b>\$426,548</b>	<b>\$333,496</b>	<b>\$415,202</b>

*Note: Dollars in thousands.*

<sup>1</sup> Funds provided by other DOE offices and U.S. Agency for International Development.

---

## Major Changes

---

The FY 1998 budget request of NE reflects a major shift in the Department's nuclear energy programs. For many years, the Department's nuclear energy research and development efforts were focused on the development of new reactor technologies. In recent years, the Department focused its attention on the development, design, and certification of advanced light water reactors (ALWR). These programs--ALWR design certification and First-of-a-Kind Engineering--were cost-shared with industry and represented an effective leveraging of public funds with private investment to achieve a goal of importance to the future of the United States--maintaining the nuclear option well into the next century.

The FY 1998 request includes funds to close-out remaining ALWR activities and the Department considers its role in the development and implementation of next-generation reactors to be completed. From this point forward, we expect that U.S. industry--reactor vendors, architect-engineers, and utilities--will complete the work needed to assure the availability of advanced light water reactors in the future.

In FY 1998, the Department's role in nuclear energy R&D shifts to addressing technical issues related to the aging of the 109 nuclear plants that provide 22 percent of the Nation's electricity, such as key component safety and life cycle management, spent fuel minimization, nuclear risk management, advanced instrumentation and control system technology, and reliability. The Department will form a panel of independent experts to peer review management of the proposed FY 1998 program. This peer review panel will review the planned workscope, the selection of performers, and suggest modifications and processes to improve the FY 1998 nuclear research and development program. The panel will also review the Department's efforts to apply innovative methods to collaborate and share costs with industry, national laboratories, and universities to assure that the Nation carries out a strong, coordinated research and development effort.

In FY 1998, the Office of Nuclear Energy, Science and Technology will also increase its support for higher education and research and development at universities and colleges across the country. This support will be provided from funds requested under the Office's various research and development programs. In total, Nuclear Energy proposes to provide \$12.3 million in support to U. S. universities in FY 1998.

Close-out of the Advanced Light Water Reactor Design and First-of-a-Kind Engineering (FOAKE) Program provides the Department's Office of Nuclear Energy, Science and Technology with the opportunity to consider the nation's long-term R&D requirements to maintain a U.S. competency in world-class nuclear power technology. In order to establish a long-term plan to address these issues, the Department proposes to establish an independent expert panel to assess what long-term goals, priorities and strategy the U.S. should have for research and education in support of commercial nuclear power and what the respective roles of the Federal Government (including the national laboratories), industry and academia should be implementing such a strategy. The Department will create the panel early in 1997 and ask it to report to the Secretary by August 1997, so that its analysis and recommendations can be considered in formulation of the Department's FY 1999 budget. Copies of the group's final report will be made available to concerned members of Congress and the public.

The advisory committee will be asked to outline a strategic vision for research and education that would permit the U.S. to maintain nuclear power technology as an option for economic and safe production of electricity well into the next century. The committee will be asked to assess the appropriate roles of industry, universities, and the national laboratories in the context of such factors as constraints on Federal spending due to deficit reduction efforts, changes in the structure and economics of the domestic electric power industry with deregulation, uncertainties about the long-term solution to high-level waste storage, trends in the demand for new nuclear power generation capability at home and abroad, the aging of U.S. reactors and prospects for life extension, and the need for consolidation and possible enhancement of existing Federal and non-Federal research facilities. The committee will be asked to focus its efforts and recommendations for future Federal involvement (including program structure and program management) on its best assessment of society's needs in this area over the next several decades, without regard for the current configuration of programs and facilities. The recommended strategy should be designed to promote an open, competitive process for establishing programmatic priorities and selecting research projects for funding. The committee will be encouraged to consult broadly during its deliberations with interested and affected parties.

---

## Program Performance Measures

---

Key program performance measures used to judge the effectiveness of each program element are shown below. In addition to the technical effectiveness measures shown, program progress, customer satisfaction, and employee satisfaction are monitored to ensure that NE's programs are relevant and managed in a cost-effective manner.

### International Nuclear Safety Program

- ▶ Improve safety of Soviet-designed reactors through improved operating procedures and management practices
- ▶ Improve safety of Soviet-designed reactors through safety systems and fire safety upgrades
- ▶ Improve safety of Soviet-designed reactors by conducting plant-specific safety analyses

### Chornobyl Shutdown Initiative

- ▶ Implement near-term measures, specified in the G-7 MOU for Chornobyl shutdown, that help transform Chornobyl Unit 4 sarcophagus into an environmentally safe system (funded by U.S.AID)
- ▶ Provide International Chornobyl Center for Nuclear Safety, Radioactive Waste and Radioecology with capabilities needed to analyze the eventual shutdown of remaining operating Chornobyl reactors

### Nuclear Security

- ▶ Complete detailed design, safety analysis and regulatory approval phase for Russian plutonium production reactor core conversion (funded by DOD)
- ▶ Improve spent fuel management practices at reactors in the former Soviet Union to discourage reprocessing
- ▶ Implement nuclear reactor safety upgrades associated with nonproliferation activities at Aqtau BN-350 reactor in Kazakstan

### Termination Costs

- ▶ Continue the demonstration of the electrometallurgical treatment of EBR-II spent fuel
- ▶ Continue shutdown of EBR-II and other unneeded ANL-W facilities and place in an industrially and radiologically safe shutdown condition

### Termination Costs-continued

- ▶ Convert the sodium coolant from EBR-II secondary systems to sodium carbonate
- ▶ Place all FFTF spent fuel into interim, dry cask storage by September 1998

### Isotope Support

- ▶ Achieve plant capability to routinely produce 10 percent of the U.S. demand for Mo-99 with a capability to satisfy a significantly greater proportion of U.S. demand for short durations; this capability is needed as a backup to existing foreign supplies of Mo-99 until more reliable commercial sources become available.
- ▶ Privatize selected isotope activities
- ▶ Achieve 95 percent on-time deliveries
- ▶ Achieve a 20 percent gross profit (i.e., the difference between revenues and costs of goods and services)
- ▶ Respond to customer requests for information within 48 hours
- ▶ Keep customer complaints to less than four percent of all deliveries made

### Nuclear Energy Security

- ▶ Participate in international forums to address critical nuclear issues and provide support and leadership to international agencies
- ▶ Develop advanced instrument controls and man-machine interface systems for existing reactors
- ▶ Assess technical and regulatory issues related to higher burnup for commercial nuclear fuel
- ▶ Propose a candidate design for new, higher enriched fuel

### Nuclear Technology R&D

- ▶ Develop electrometallurgical spent fuel treatment for DOE spent fuel types
- ▶ Characterize performance of reference waste forms resulting from electrometallurgical treatment

### Uranium Programs

- ▶ Blend-down at least three metric tons of highly enriched uranium at the Portsmouth GDP
- ▶ Maintain the safety of depleted uranium hexafluoride cylinders in a cost-effective manner

---

---

## Program Performance Measures

---

---

### **Uranium Programs-continued**

- Continue special inspections in Russia to increase confidence that LEU being purchased is derived from dismantled Russian nuclear weapons
- Complete final EIS and issue record of decision for dispositioning of depleted uranium hexafluoride
- Report to Congress on the effect of the Russian HEU Purchase Agreement on domestic uranium mining, conversion, and enrichment industries, and the operation of the gaseous diffusion plants
- Generate revenues through the sale of excess Departmental uranium and deposit the proceeds in the General Fund at Treasury
- Complete the construction of a new cylinder storage yard at Paducah

### **Advanced Radioisotope Power Systems**

- Provide Radioisotope Thermoelectric Generators that satisfy NASA power requirements for the Cassini mission and support Cassini launch in October 1997
- Maintain program facility operations and capabilities for current and future space and national security missions

### **University Research Support**

- Slow or reverse the decline in the number of graduates from U.S. nuclear science programs
- Deliver timely shipments of fresh fuel to enable reactor operations to continue unimpeded

### **Landlord Programs (Oak Ridge and Test Reactor Area)**

- Continue to provide for essential Oak Ridge Operations Office infrastructure requirements
- Maintain and upgrade the TRA site and buildings including fire and life safety improvements

### **ATR Fusion Irradiation**

- Complete fabrication, installation and testing of the ATR irradiation test vehicle to enable start of DOE-MONBUSHO fusion materials testing in FY 1999

### **Program Direction**

- Achieve assigned Departmental streamlining goal to reduce HQ staff



DEPARTMENT OF ENERGY  
FY 1998 CONGRESSIONAL BUDGET REQUEST  
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT  
(Tabular dollars in thousands, Narrative in whole dollars)

OFFICE OF NUCLEAR ENERGY, SCIENCE AND TECHNOLOGY  
NUCLEAR ENERGY R&D

PROGRAM MISSION

The mission of the Nuclear Energy Research and Development program is to enhance the safety, economic, and national security interests of the United States, through a focused program of activities that provide R&D support for commercial nuclear power, universities, space and defense missions, and international nuclear safety collaboration.

The GOALS of the Nuclear Energy R&D program are to:

1. Enhance the safety, reliability, and economic operation of U.S. nuclear reactors.
2. Advanced nuclear systems control and management technologies.
3. Provide compact, safe nuclear power systems and related technologies to space, national security and other customers.
4. Contribute to the U.S. nuclear education infrastructure and support university research reactor cleanup.
5. Manage facilities in a safe, environmentally-sound, and cost-effective manner.
6. Increase international collaboration to address a range of technology topics.
7. Reduce the amount of spent fuel generated in nuclear power plants.

The OBJECTIVES related to these goals are:

1. Address issues critical to aging U. S. nuclear power plants.
2. Meet the commitment to NASA to provide Radioisotope Thermoelectric Generators (RTG) and heater units for the Cassini mission to Saturn and to provide power systems for future space explorations.
3. Maintain the infrastructure needed to build advanced radioisotope power supplies for ongoing and future National Security applications.

The OBJECTIVES related to these goals are: - continued

4. Seek and foster collaboration with safety research institutions in the U.S. and worldwide.
5. Provide fuel assistance, fellowship grants, reactor upgrade funding, and other assistance to U.S. universities, in cooperation with industry.
6. Assist universities that plan to shut down research reactors.
7. Promote cooperation among government, industry, universities and national laboratories to develop personnel systems, information and technological resources.
8. Manage the research and test reactors and supporting facilities at Oak Ridge, Brookhaven, and Idaho required to meet DOE missions in a safe, economical, and environmentally-sound manner.
9. Develop advanced light water reactor fuel cycle schemes for greatly extended burnup fuel and spent fuel minimization.
10. Identify new opportunities to use U. S. technology to enhance nuclear safety worldwide.
11. Perform irradiation services for the DOE fusion program.

PERFORMANCE MEASURES:

1. Develop advanced instrumentation controls and man-machine interface systems.
2. Improve key component safety and life cycle management for aging reactors.
3. Provide RTGs that satisfy NASA's power requirements for the Cassini mission, and maintain program facility operations and capabilities for future space and national security missions.
4. Maintain and strengthen core competencies in U.S. nuclear engineering and health physics programs.
5. Deliver timely shipments of fresh fuel to university reactors to enable reactor operations to continue unimpeded.
6. Continue to upgrade the physical plant and site infrastructure and to correct ES&H deficiencies to ensure safe and reliable operation of Test Reactor Area site facilities.
7. Complete the irradiation test vehicle in FY 1998 to meet Energy Research test requirements for fusion materials irradiations at ATR beginning in FY 1999.
8. Provide initial response to university requests for spent fuel assistance within two weeks.

#### SIGNIFICANT ACCOMPLISHMENTS AND PROGRAM SHIFTS:

1. Complete Cassini Mission support.
2. Initiate RTG design work needed to support a new national security program.
3. Initiate new advanced radioisotope power system development to support future NASA missions.
4. Continue TRA Fire and Life Safety Improvements.
5. Complete the Advanced Test Reactor irradiation test vehicle to support the DOE/Monbusho Fusion Energy program test requirements.
6. Award fellowships to outstanding and promising M.S. and Ph.D. students engaged in nuclear science research and training, ensuring an adequate supply of trained nuclear personnel.
7. Establish agreements with international entities on advanced material testing, characterization and inspection technologies for irradiated reactor vessel materials.
8. Develop technology to increase the safety of U.S. nuclear power plants, focusing on instrumentation and control systems upgrades.
9. Design and initiate testing of an advanced fuel cladding material to point the way toward a reduced generation of nuclear waste.
10. Establish neutronic and physical requirements for a new extremely high burnup fuel form.

NUCLEAR ENERGY R&D

PROGRAM FUNDING PROFILE

(Dollars in Thousands)

<u>Sub-program</u>	FY 1996 Current Appropriation	FY 1997 Original Appropriation	FY 1997 Adjustments	FY 1997 Current Appropriation	FY 1998 Budget Request
Light Water Reactors	\$ 39,119	\$ 38,000	\$ 0	\$ 38,000	\$ 0
Advanced Radioisotope Power Systems	48,402	38,810	0	38,810	47,000
Nuclear Energy R&D Program Direction	17,040	16,596	0	16,596	16,700
Oak Ridge Landlord	14,400	11,520	0	11,520	9,500
TRA Landlord	3,900	3,000	0	3,000	3,217
ATR Fusion Irradiations	2,282	800	0	800	2,000
University Nuclear Science and Reactor Support	3,492	4,000	0	4,000	6,000
Nuclear Energy Security	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>39,761</u>
<b>SUBTOTAL</b>	<b>\$ 128,635</b>	<b>\$ 112,726</b>	<b>\$ 0</b>	<b>\$ 112,726</b>	<b>\$ 124,178</b>
Adjustment-Unobligated/Uncosted Carryover	<u>-4,040</u>	<u>- 1,796</u>	<u>0</u>	<u>- 1,796</u>	<u>0</u>
<b>TOTAL, NUCLEAR ENERGY R&amp;D</b>	<b><u>\$ 124,595</u></b>	<b><u>\$ 110,930</u></b>	<b><u>\$ 0</u></b>	<b><u>\$ 110,930</u></b>	<b><u>\$ 124,178</u></b>
Energy Asset Acquisition					
TRA Landlord	0	0	0	0	10,850

NUCLEAR ENERGY R&D

PROGRAM FUNDING BY SITE

(Dollars in Thousands)

<u>Laboratory/Plant/Installation</u>	<u>FY 1996 Current Appropriation</u>	<u>FY 1997 Original Appropriation</u>	<u>FY 1997 Adjustments</u>	<u>FY 1997 Current Appropriation</u>	<u>FY 1998 Budget Request</u>
Albuquerque Operations Office	\$320	\$785	\$0	\$785	\$650
Los Alamos Scientific Laboratory	13,650	12,771	0	12,771	13,500
Sandia National Laboratory	5,064	2,000	0	2,000	4,000
Chicago Operations Office	16,564	19,989	0	19,989	5,000
Argonne National Laboratory	1,777	2,720	0	2,720	6,350
Ames Laboratory	365	0	0	0	0
Idaho Operations Office	3	100	0	100	5,115
Idaho National Engineering Laboratory	6,578	5,780	0	5,780	11,567
Nevada Operations Office	285	1,185	0	1,185	1,070
Oakland Operations Office	20,764	17,884	0	17,884	2,800
Ohio Operations Office	100	0	0	0	155
Mound Plant	7,851	6,600	0	6,600	8,000
Oak Ridge Operations Office	15,780	12,510	0	12,510	2,000
Oak Ridge National Laboratory	3,895	4,465	0	4,465	22,514
Oak Ridge Institute of Science and Education	412	775	0	775	900
Richland Operations Office	512	510	0	510	0
Pacific Northwest Laboratory	690	0	0	0	560
Savannah River Site	9,860	0	0	0	0
All Other Site	24,165	24,652	0	24,652	39,997
Foreign	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
<b>TOTAL</b>	<b><u>\$128,635</u></b>	<b><u>\$112,726</u></b>	<b><u>\$ 0</u></b>	<b><u>\$112,726</u></b>	<b><u>\$124,178</u></b>
Energy Asset Acquisition					
Idaho Operations Office					
Idaho National Engineering Laboratory	\$0	\$0	\$0	\$0	\$10,850

OFFICE OF NUCLEAR ENERGY, SCIENCE AND TECHNOLOGY  
CAPITAL OPERATING EXPENSES AND CONSTRUCTION SUMMARY

NUCLEAR ENERGY R&D  
(\$ in Thousands)

Capital Operating Expenses

	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>\$ Change</u>	<u>% Change</u>
Advanced Radioisotope Power Systems	\$ 900	\$ 2,350	\$ 3,000	\$ 650	28
Oak Ridge Landlord	1,300	0	0	0	0
TRA Landlord	<u>185</u>	<u>120</u>	<u>310</u>	<u>190</u>	<u>158</u>
<b>SUBTOTAL, Equipment</b>	<b>\$ 2,385</b>	<b>\$ 2,470</b>	<b>\$ 3,310</b>	<b>\$ 840</b>	<b>34</b>
GPN-102 General Plant Projects, Test Reactor Area, INEL	\$ 730	\$ 450	\$ 1,040	\$ 590	131
GPN-103 General Plant Projects, Oak Ridge Landlord, OR	\$ 800	\$ 0	\$ 0	\$ 0	0
General Plant Project, Heat Source Assembly and Test Facility Consolidation Bldg. 50, Mound Plant, Miamisburg, Ohio	<u>\$ 0</u>	<u>\$ 0</u>	<u>\$ 1,950</u>	<u>\$ 1,950</u>	<u>100</u>
<b>SUBTOTAL, Construction</b>	<b>\$ 1,530</b>	<b>\$ 450</b>	<b>\$ 2,990</b>	<b>\$ 2,540</b>	<b>564</b>

Construction Funded Project Summary

<u>Project Number</u>	<u>Project Title</u>	<u>TEC</u>	<u>FY 1996 Approp.</u>	<u>FY 1997 Approp.</u>	<u>FY 1998 Request</u>	<u>Unapprop. Balance</u>
95-E-201	TRA Fire and Life Safety Improvements, INEL	\$ 15,446	\$ 1,900	\$ 1,000	\$10,850 <sup>1</sup>	\$0

## NUCLEAR ENERGY R&D

### LIGHT WATER REACTORS

(Dollars in Thousands)

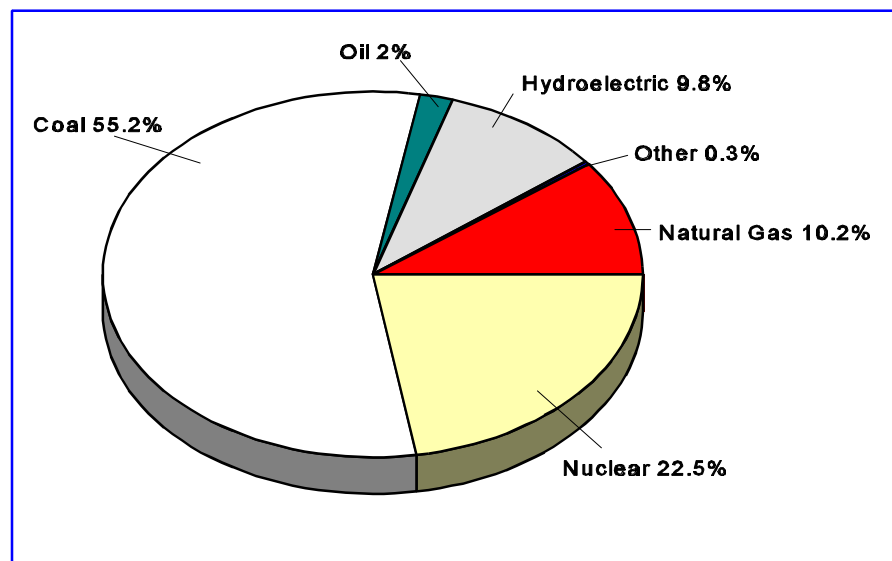
#### I. Mission Supporting Goals and Objectives

The focus of the Department of Energy's light water reactor nuclear research and development program is to develop technologies to help maintain nuclear power as a viable option for our Nation's future electric production needs. The light water reactor program leverages of the Department's resources with those of the electric utilities, nuclear technology vendors, and other governmental and private participants interested in nuclear technology.

Fiscal Year 1997 is the final year of funding for this budget category. In providing for FY 1997, it was the intent of Congress that this would be the last year of funding for the Advanced Light Water Reactor (ALWR) Design Certification and First-of-a-Kind Engineering (FOAKE) programs. Therefore, no funding is being sought under this budget item in FY 1998. A small amount of funding is being sought in the termination account to fund closeout of the Design Certification program, and the FOAKE program will be completed with FY 1997 funding.

The program will have achieved its major objectives. On December 6, 1996, the Nuclear Regulatory Commission voted in favor of design certification for the two evolutionary plants, System 80+ and Advanced Boiling Water Reactor (ABWR). The AP600 passively safe plant design will receive its NRC Safety Evaluation Report in late 1997 with final design approval and certification in 1998. The program was a model in cooperative ventures between government and industry in achieving national objectives important to the long-term energy supply of the country.

The light water reactor research and development program also enabled the Federal Government to maintain the core nuclear competency and capability that is required if the U.S. is to remain a key participant in international activities related to the development and implementation of nuclear technology, the fostering of enhanced nuclear safety, and the development of global non-proliferation policies. Over 230 commercial light water reactors operate in other countries and more are expected to be built as developing nations expand their electricity demands and as world-wide issues such as global climate changes are addressed. The future national and economic security of the United States will be impacted by the international growth of nuclear power. It is, therefore, important that the Federal Government maintain its involvement and capability in this area. This involvement will be part of a new initiative, Nuclear Energy Security, that will be focused on technology to support the continued safe and economic operation of the 109 existing nuclear power plants that provide over 20 percent of the Nation's electricity.



*Fuel Shares of U.S. Electric Generation, 1995*

Close-out of the Advanced Light Water Reactor Design and First-of-a-Kind Engineering (FOAKE) Program provides the Department's Office of Nuclear Energy, Science and Technology with the opportunity to consider the nation's long-term R&D requirements to maintain a U.S. competency in world-class nuclear power technology. In order to establish a long-term plan to address these issues, the Department proposes to establish an independent expert panel to assess what long-term goals, priorities and strategy the U.S. should have for research and education in support of commercial nuclear power and what the respective roles of the Federal Government (including the national laboratories), industry and academia should be implementing such a strategy. The Department will create the panel early in 1997 and ask it to report to the Secretary by August 1997, so that its analysis and recommendations can be considered in formulation of the Department's FY 1999 budget. Copies of the group's final report will be made available to concerned members of Congress and the public.

The advisory committee will be asked to outline a strategic vision for research and education that would permit the U.S. to maintain nuclear power technology as an option for economic and safe production of electricity well into the next century. The committee will be asked to assess the appropriate roles of industry, universities, and the national laboratories in the context of such factors as constraints on Federal spending due to deficit reduction efforts, changes in the structure and economics of the domestic electric power industry with deregulation, uncertainties about the long-term solution to high-level waste storage, trends in the demand for new nuclear power generation capability at home and abroad, the aging of U.S. reactors and prospects for life extension, and the need for consolidation and possible enhancement of existing Federal and non-Federal research facilities. The committee will be asked to focus its efforts and recommendations for future Federal involvement (including program structure and program management) on its best assessment of society's needs in this area over the next several decades, without regard for the current configuration of programs and facilities. The recommended strategy should be designed to promote an open, competitive process for establishing programmatic priorities and selecting research projects for funding. The committee will be encouraged to consult broadly during its deliberations with interested and affected parties.



II. Funding Schedule

<u>Program Activity</u>	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>\$ Change</u>	<u>% Change</u>
Advanced Light Water Reactor	\$ 31,119	\$ 34,000	\$0	\$ -34,000	-100
Commercial Light Water Reactor	8,000	4,000	0	-4,000	-100
<b>TOTAL, Light Water Reactors</b>	<b><u>\$ 39,119</u></b>	<b><u>\$ 38,000</u></b>	<b><u>\$0</u></b>	<b><u>\$-38,000</u></b>	<b><u>-100</u></b>

III. Performance Summary

The former LWR programs were cost-shared among utilities, industry and the Department of Energy and involved both domestic and international participants. These programs provided approximately 1,000 jobs for highly skilled professionals located in 20 states.

III. Performance Summary - Major Accomplishments:	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>
<u>Advanced Light Water Reactor</u>			
• Conduct/complete FOAKE Program	\$14,000	\$17,719	\$0
• Conduct/complete Design Certification Program for AP600, ABWR and CE System 80+	17,119	16,281	0
Total Advanced Light Water Reactor	\$31,119	\$34,000	\$0
<u>Commercial Light Water Reactor</u>			
• Complete first prototype reactor pressure vessel (RPV) annealing demonstration and plan for second demonstration	5,000	0	0
• Conduct severe accident research	1,000	2,000	0
• Conduct plant life improvement program	2,000	2,000	0
Total Commercial Light Water Reactor	\$8,000	\$ 4,000	\$0
Total Light Water Reactor	<u>\$39,119</u>	<u>\$38,000</u>	<u>\$0</u>

EXPLANATION OF FUNDING CHANGES FROM FY 1997 to FY 1998:

Funds are not being sought under this budget heading in FY 1998.

## NUCLEAR ENERGY R&D

### ADVANCED RADIOISOTOPE POWER SYSTEMS (Dollars in Thousands)

#### I. Mission Supporting Goals and Objectives

This activity provides support for radioisotope power source development, demonstration, testing, and delivery. (See map on next page for participating laboratories and contractors.) Radioisotope power sources are the enabling technology for space and terrestrial applications requiring proven, reliable and maintenance-free power supplies capable of producing up to several kilowatts of power and operating under severe environmental conditions for many years. Previous missions that have used radioisotope power sources include the Apollo lunar surface scientific packages, and Pioneer, Viking, Voyager, Galileo, and Ulysses spacecrafts.

Recent program emphasis through FY 1997 has been on fabricating and delivering to NASA three new Radioisotope Thermoelectric Generators (RTGs) and 157 heater units for the Cassini mission and on providing three heater units for the Mars Pathfinder mission. Effort has also continued in support of ongoing national security missions. In FY 1998, the program will continue to support the current national security missions and the Cassini mission by providing ground operations support , and implementing emergency preparedness plans and operations for the Cassini launch in October 1997.

Support for two new missions is beginning in FY 1997 with major program emphasis in FY 1998, i.e., 1) design of an advanced power system for supporting future NASA missions, such as Pluto Express, Europa or solar probe that will occur after the turn of the century; 2) a new national security mission. The first NASA launches could occur as early as March 2001. The Department's national security customers will require delivery of several RTGs over the next decade. Also, potential missions to Mars to explore for life could require advanced radioisotope power sources and heater units.

The program will develop new, state-of-the-art power supplies required to support both the NASA space missions as well as the national security applications. The outyear planning for these missions reflects arrangements with the national security users, NASA, and DOE to ensure the capabilities of the facility infrastructure to produce RTGs. This infrastructure represents the sole national capability to produce radioisotope power systems. Without these systems, critical national security activities and NASA missions to explore deep space and the surfaces of neighboring planets would not occur. In accordance with arrangements with our customer agencies, NASA (or other users) will provide funds to the Department to pay for mission specific costs (including mission specific development, hardware fabrication, preparation of safety analysis reports, and other mission support costs).

In FY 1998, the program will purchase Pu-238 from Russia to augment the near-term supply of Pu-238 for NASA's space missions. Since Pu-238 purchased from Russia cannot be used for national security missions, a domestic source must be developed. Tests will continue to assess the Pu-238 production capability of the High Flux Isotope Reactor (HFIR) at Oak Ridge National Laboratory as a potential facility to provide long-term supply of Pu-238 for both space and national security missions. Also, the program will continue to develop the capability to recycle Pu-238 scrap for reuse for new missions.

**Washington**

- RUST Fed. Services of Hanford
  - Shipping Cask

**Iowa**

- Ames Research Center
  - T/E Development

**Ohio**

- Mound Plant
  - RPS Assembly/Testing
- Battelle Memorial
  - Instrumentation
  - Materials Evaluation

**Pennsylvania**

- Lockheed Martin Missiles and Space
  - Cassini
- Westinghouse
  - QA

**Nevada**

- EG&G
  - Launch Support
  - Emergency Response

**California**

- JPL
  - Thermoelectric Material Development
- Lawrence Livermore
  - Launch Support

**New Mexico**

- Los Alamos
  - RPS Safety
  - Launch Support
  - Pu-238 Fabrication/Testing
- Sandia
  - RPS Safety

**Maryland**

- Orbital Sciences
- Applied Physics Lab
- NUS
  - Technical Support
- Teledyne Brown
  - RTG Development

**South Carolina**

- Savannah River Plant
  - Pu-238 Processing

**Tennessee**

- Oak Ridge
  - Materials
  - Iridium Components Production

*Advanced Radioisotope Power Systems -- Primary Participants*

II. Funding Schedule

<u>Program Activity</u>	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>\$ Change</u>	<u>% Change</u>
Radioisotope Power Systems	\$ 37,602	\$ 34,410	\$33,450	\$ -960	-3
Special Applications	1,800	1,800	2,000	+200	+11
Plutonium-238 Acquisition and Processing	<u>9,000</u>	<u>2,600</u>	<u>11,550</u>	<u>+8,950</u>	<u>+344</u>
<b>TOTAL, Advanced Radioisotope Power Systems</b>	<b><u>\$ 48,402</u></b>	<b><u>\$ 38,810</u></b>	<b><u>\$47,000</u></b>	<b><u>\$+8,190</u></b>	<b><u>+21</u></b>

III. Performance Summary - Major Accomplishments:

**FY 1996**      **FY 1997**      **FY 1998**

Radioisotope Power Systems

• Provide RTGs that satisfy NASA power requirements for the Cassini mission and support Cassini launch in October 1997.	\$29,102	\$15,510	\$4,150
• Initiate program to provide advanced power system for future NASA missions.	\$0	\$1,000	\$1,500
• Maintain program facility operations and capabilities for current and future space and national security missions.	\$8,500	\$17,900	\$24,350
• Implement facility modifications to allow consolidation of heat source and RTG assembly operations into a single facility at the Mound Plant	\$0	\$0	\$1,950
• Support university research and development into power conversion, and the development of new fuels and materials	\$0	\$0	\$1,500
Total Radioisotope Power Systems	\$37,602	\$34,410	\$33,450

#### Special Applications

- |   |         |         |         |
|---|---------|---------|---------|
| • Satisfy user needs for support to ongoing and new national security programs. | \$1,800 | \$1,800 | \$2,000 |
|---|---------|---------|---------|

#### Plutonium-238 Acquisition and Processing

- |   |         |         |          |
|---|---------|---------|----------|
| • Assure source of Pu-238 by completing post-Cassini Pu-238 scrap recovery, purchasing Pu-238 from Russia, and assessing HFIR Pu-238 production capability. | \$9,000 | \$2,600 | \$11,550 |
|---|---------|---------|----------|

Total Advanced Radioisotope Power Systems	<u>\$48,402</u>	<u>\$38,310</u>	<u>\$47,000</u>
---	-----------------	-----------------	-----------------

#### SIGNIFICANT FUNDING CHANGES FROM FY 1997 TO FY 1998

The increase is primarily to ensure a near- and long-term supply of Pu-238. Pu-238 will be purchased from Russia to augment the near-term inventory for space missions. Pu-238 purchased from Russia cannot be used for national security missions, so a domestic source must be developed if these critical activities are to continue. Work will continue to assess the Pu-238 production capability at HFIR as a facility to provide a long-term domestic supply of Pu-238 for both space and national security missions. In addition, there will be an assessment of the Pu-238 capabilities of the Fast Flux Test Facility, which will be evaluated primarily for a potential role in producing tritium for defense programs. Also, the emphasis in the ongoing efforts will transition from Cassini specific efforts to maintaining the facilities and expertise that is required to assure the capability to produce radioisotope power systems. Part of this effort will include a construction project at Mound to consolidate efforts into a single primary building and thereby increase efficiency and reduce long-term costs.

+ \$ 8,190

## NUCLEAR ENERGY R&D

### OAK RIDGE LANDLORD

(\$ in Thousands)

#### I. Mission Supporting Goals and Objectives

Oak Ridge Landlord provides for centralized Oak Ridge Operations Office (ORO) infrastructure requirements and general operating costs for those activities outside plant fences of the Oak Ridge National Laboratory (ORNL), the Y-12 Plant, and the K-25 Plant. Activities include environmental, safety and health (ES&H), and quality assurance facility compliance activities; ES&H upgrades of facilities at the Water Plant, which provides potable water for the Y-12 and ORNL Plants, as well as for the City of Oak Ridge; training and development activities; support to the Directives Management Group; technology development support to small and disadvantaged businesses; maintenance of roads and grounds; operation of the American Museum of Science and Energy; operation of the Emergency Operations Center (EOC), which is responsible for emergency management at ORO; payment-in-lieu-of-taxes due to the local community; physical security; the ORO Financial Center Activities; and litigation expenses incurred by former DOE Management and Operation contractors. In addition, due to budget constraints, the Department plans to phase out over two years, the American Museum of Science and Energy subsidy, and will work with the local community officials to arrange for additional support to allow Museum operations to reflect community needs and interest.

#### II. Funding Schedule

<u>Program Activity</u>	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>\$ Change</u>	<u>% Change</u>
<b>TOTAL, Oak Ridge Landlord</b>	<b><u>\$ 14,400</u></b>	<b><u>\$ 11,520</u></b>	<b><u>\$ 9,500</u></b>	<b><u>\$ -2,020</u></b>	<b><u>- 18</u></b>

Funding Detail

	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>
Museum	\$1,700	\$1,650	\$1,200
Physical Security	1,800	1,700	1,250
Emergency Operations Center	1,760	1,436	1,436
ES&H Compliance	250	400	400
ES&H Activities - Johnson Controls	1,900	170	91
Financial Service Center (Automation)	1,920	1,637	1,637
Litigation	1,000	0	0
Roads and Grounds	1,250	1,200	850
Directives/Orders	495	515	515
Training/Development	550	640	600
Federal Building Infrastructure	600	351	100
Payment in Lieu of Taxes	1,000	1,600	1,200
Miscellaneous/Other Expenses	<u>175</u>	<u>221</u>	<u>221</u>
<b>TOTAL, Oak Ridge Landlord</b>	<b><u>\$14,400</u></b>	<b><u>\$11,520</u></b>	<b><u>\$9,500</u></b>

**III. Performance Summary - Major Accomplishments:**

	<b><u>FY 1996</u></b>	<b><u>FY 1997</u></b>	<b><u>FY 1998</u></b>
<u>Oak Ridge Landlord</u>			
• Continuation of ongoing activities associated with the EOC, roads and grounds, and physical security.	\$4,810	\$4,336	\$3,536
• Continuation of ongoing activities associated with the American Museum of Science and Energy. Accomplishments will include a two year phase out of the Department's subsidy to the Museum which will become self sustaining	\$1,700	\$1,650	\$1,200
• Payments associated with payment-in-lieu-of-taxes	\$1,000	\$1,600	\$1,200
• ES&H upgrades at the Water Plant and other DOE-owned facilities	\$2,425	\$921	\$591
• Payment of litigation expenses for class action lawsuits files against former DOE Management and Operating (M&O) contractors in FY 1996	\$1,000	\$0	\$0
• Initiate Water Plant Controls Modernization, Phase I - Design for controls and instrumentation at the main treatment building site of the Water Plant in FY 1996	\$200	\$0	\$0
• Identification, packaging, and shipment of documents relating to Human Radiation Experimentation (HRE) to the National Archives for permanent storage	\$300	\$221	\$221
• Continued responses to Defense Nuclear Facility Safety Board (DNFSB) recommendations involving directives management, training and development, emergency management, and ES&H activities	\$1,045	\$1,155	\$1,115
• Activities associated with the Oak Ridge Financial Service Center -- accounting migration of the eight satellite offices to ORO, implementation of payment transfer, and full implementation of all other activities including financial database consolidation	<u>\$1,920</u>	<u>\$1,637</u>	<u>\$1,637</u>
TOTAL	\$14,400	\$11,520	\$9,500



**Significant Funding Changes From FY 1997 To FY 1998**

Reduction of \$2,020,000 causes the following impacts:

- Reduction will result in the closing of the American Museum of Science and Energy two to three days per week \$ - 450
- Reduction in Physical Security will result in the closing of three or four building portals \$ - 450
- Delay in some Roads and Grounds Maintenance \$ -350
- Reduction for Payment-in-lieu-of-Taxes to local communities to reflect current agreement \$ -400
- Delay in infrastructure projects for the Federal Building and other DOE owned facilities \$ -330
- Reduction in training and development will result in reevaluation of needs \$ - 40

Total Funding Changes, Oak Ridge Landlord \$-2,020

## NUCLEAR ENERGY R&D

### TRA LANDLORD (Dollars in Thousands)

#### I. Mission Supporting Goals and Objectives

Test Reactor Area (TRA) Landlord activities include operating support, equipment procurement, General Plant Projects (GPP), and Line Item Capital Projects (LICP) to ensure the safety and reliability of TRA site facilities. The FY 1998 budget increase provides for improvements in fire safety for the TRA site. The principal fire safety improvement in FY 1998 will be the competitive, fixed-price procurement and the start of installation of a redundant water supply system required to meet current fire protection standards.

#### II. Funding Schedule

<u>Program Activity</u>	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>\$ Change</u>	<u>% Change</u>
TRA Landlord	<u>\$3,900</u>	<u>\$3,000</u>	<u>\$3,217</u>	<u>\$+217</u>	<u>+7</u>
<b>Subtotal, TRA Landlord</b>	<b><u>\$3,900</u></b>	<b><u>\$3,000</u></b>	<b><u>\$3,217</u></b>	<b><u>\$+217</u></b>	<b><u>+7</u></b>
Energy Asset Acquisition	0	0	\$10,850	\$+10,850	+100

#### III. Performance Summary - Major Accomplishments:

##### TRA Landlord

	<b><u>FY 1996</u></b>	<b><u>FY 1997</u></b>	<b><u>FY 1998</u></b>
<ul style="list-style-type: none"> <li>Provide LICP and GPPs planning, development, design, project validation and construction management; continue the correction of facility ES&amp;H deficiencies identified during facility inspections, self-assessments and operational inspections to ensure that TRA Landlord facilities are maintained in compliance with programmatic, safety and health, and environmental requirements; and continue self-assessment activities to provide TRA Landlord management with the maintenance status and the safety condition of TRA Landlord facilities.</li> </ul>	\$1,085	\$1,430	\$1,867
<ul style="list-style-type: none"> <li>Continue to purchase General Purpose Capital Equipment (GPCE) to support TRA Landlord functions.</li> </ul>	185	120	310

III. Performance Summary - Major Accomplishments: -continued

	<b><u>FY 1996</u></b>	<b><u>FY 1997</u></b>	<b><u>FY 1998</u></b>
• Conduct GPPs required to maintain the site and buildings to meet programmatic requirements in a safe and environmentally sound manner. GPPs include such improvement as the TRA Demineralized Water Plant Upgrade.	730	450	1,040
• Continue construction phase of the TRA Fire and Life Safety LICP including procurement and start of installation of a completely redundant water supply consisting of approved fire pumps and a storage tank that meets current requirements. FY 1998 funding requirements are \$4,425,000 and outyear requirements are \$6,425,000.	1,900	1,000	10,850
Total TRA Landlord	<b><u>\$3,900</u></b>	<b><u>\$3,000</u></b>	<b><u>\$14,067</u></b>

Explanation of Funding Changes From FY 1997 To FY 1998:

Increased equipment, GPPs, corrective actions, and support required to maintain the site and facilities in a safe and environmentally sound manner.	\$+1,217
Provide for the highest priority and most costly single Fire and Life Safety upgrade item which is the competitive, fixed-price procurement and installation of a completely redundant water supply consisting of UL-listed and factory mutual approved fire pumps and a storage tank capable of meeting the requirements of DOE Order 420.1, Facility Safety. Failure to install the redundant water supply system and complete the remaining Fire and Life Safety upgrades will result in the TRA continuing to be in violation of current fire protection standards. The TRA complex is an asset exceeding \$1.0 billion in value.	\$+3,425
Reflects full up-front funding for construction projects, in accordance with the Administration's new policy.	<u>\$+6,425</u>
Total	<u>\$+11,067</u>

DEPARTMENT OF ENERGY  
FY 1998 CONGRESSIONAL BUDGET REQUEST  
ENERGY SUPPLY RESEARCH AND DEVELOPMENT

CONSTRUCTION PROJECT DATA SHEET

TRA LANDLORD

(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and location of project:	TRA Fire and Life Safety Improvements Idaho National Engineering Laboratory, Idaho	2a.	Project No.: 95-E-201
		2b.	Construction Funded
3a. Date A-E work initiated:	2nd Quarter FY 1995	5.	Previous cost estimate: Total Estimated Cost (TEC) -- \$ 15,446 Total Project Cost (TPC) -- \$ 17,011
3b. A-E work (Title I & Title II duration):	21 months		
4a. Date physical construction started:	3rd Quarter FY 1995	6.	Current Cost Estimate: TEC -- \$ 15,446 TPC -- \$ 17,011
4b. Date construction ends:	4th Quarter FY 2000		

7. Financial Schedule (Federal Funds):

<u>Fiscal Year</u>	<u>Appropriation</u>	<u>Adjustment</u>	<u>Obligations</u>	<u>Costs</u>
1995	\$ 1,696	\$ 0	\$ 1,696	\$ 1,130
1996	1,900	0	1,900	1,545
1997	1,000	0	1,000	1,686
1998	10,850 <sup>1</sup>	0	4,425	3,255
1999	0	0	4,925	6,330
2000	0	0	1,500	1,500

## CONSTRUCTION PROJECT DATA SHEETS

---

1. Title and location of project: TRA Fire and Life  
Safety Improvements  
Idaho National Engineering  
Laboratory, Idaho

2a. Project No.: 95-E-201  
2b. Construction Funded

---

8. Project Description, Justification and Scope:

The Test Reactor Area (TRA) Fire and Safety Improvements project provides for the design, procurement, and construction activities to correct fire protection and life safety code deficiencies at the TRA. Corrections consist of:

- a) Modifications to or replacement of deficient fire barriers to meet code and reduce Maximum Possible Fire Loss (MPFL) or smoke damage impacts to property and personnel.
- b) Additions, modifications, or new automatic fire suppression systems to meet code requirements for operations personnel life safety and to reduce Maximum Credible Fire Loss (MCFL) potentials to acceptable improved risk levels as required by DOE Order 5480.7.
- c) Additions or modifications to existing building heating and ventilating systems to control fire and smoke spread, upgrades or replacement of interior doors to provide smoke and fire barriers, protection of structural support members, and sealing of penetrations in fire barriers (existing walls and floors) to provide effective control of property damage and life safety protection.
- d) Modifications and expansions of the fire detection and alarm system and removal of obsolete equipment to meet codes, site-wide system compatibility, monitoring and life safety requirements.
- e) Addition of fully redundant water supply, consisting of new UL-listed and FM-approved fire pumps and a tank capable of delivering 100 percent of the highest demand for volume, pressure, and duration to meet reliability requirements of DOE Order 5480.7.

This project provides for design, procurement, and construction activities to correct fire protection and life safety code deficiencies at the TRA. Fire protection is a part of the Idaho National Engineering Laboratory (INEL) site-wide safety program to provide a safe working and operating environment. The corrections to be provided by the project are required to bring systems and facilities into compliance with fire and life safety requirements of the DOE regulations and national codes and standards. Numerous fire protection and life safety deficiencies have been identified during the current and ongoing appraisals conducted by DOE-Idaho Operations Office and Lockheed Martin Idaho Technologies contractor fire protection personnel.

Buildings constructed prior to current National Fire Protection Agency (NFPA), Uniform Building Code (UBC), and Life Safety Codes and Standards require upgrades to provide fire suppression systems, fire walls in corridors, stairwells, new exits and upgrades to existing exits, installation of fire separation walls and smoke dampers, and installation of new and upgrade of existing fire alarm and detection systems.

## CONSTRUCTION PROJECT DATA SHEETS

1. Title and location of project: TRA Fire and Life  
Safety Improvements  
Idaho National Engineering  
Laboratory, Idaho

2a. Project No.: 95-E-201

2b. Construction Funded

8. Project Description, Justification and Scope (continued):

Modifications and upgrades to existing fire protection systems, installation of new systems, and upgrades to existing facilities will bring occupied TRA facilities in compliance with national codes and standards and DOE regulations.

9. Details of cost estimate:

	<u>Item Cost</u>	<u>Total Costs</u>
a. Design and Management Costs .....		\$ 4,645
(1) Engineering, design and inspection at approximately 19% of construction costs, Item c,d (Design, Drawings, and Specifications: \$830 .....	\$1,655	
(2) Construction management .....	1,420	
(3) Project Administration .....	1,570	
b. Land and land rights		
c. Construction costs .....		8,710
(1) Improvements to land (Grading, paving, and drainage) .....	110	
(2) Buildings (New Pump House and modifications to a number of existing facilities) .....	4,500	
(3) Other structures (New 1,000,000 gal Water Storage Tank) .....	1,600	
(4) Utilities (Fire Water Lines and Power for and alarms for new/existing buildings and structures) .....	2,500	
(5) Special Facilities .....	0	
d. Standard Equipment .....		11
e. Major computer items .....		0
f. Removal costs less salvage .....		0
g. Design and project liaison, testing, checkout and acceptance .....		0
Subtotal .....		<u>\$13,366</u>
h. Contingency at 16% above cost .....		2,080
i. Total line item cost (Section 12.a.1.a(a)) .....		<u>15,446</u>
j. Non-Federal Contribution. ....		0
Net Federal total estimated cost (TEC) .....		<u>\$ 15,446</u>

# CONSTRUCTION PROJECT DATA SHEETS

1. Title and location of project: TRA Fire and Life  
Safety Improvements  
Idaho National Engineering  
Laboratory, Idaho

2a. Project No.: 95-E-201

2b. Construction Funded

## 10. Method of performance:

Project management, design, inspection and construction management will be performed by the operating contractor.  
Construction will be performed under subcontracts awarded on the basis of competitive, fixed-price bidding.

## 11. Schedule of project funding and other related funding requirements:

a. <u>Total Project Costs</u>	Prior Year	FY1993	FY 1994	FY 1995	FY1996	FY 1997	FY1998	FY1999	FY 2000	Total
(1) Total facility costs										
(a) Line item (section 10.1)	\$ 0	\$ 0	\$ 0	\$1,696	\$1,900	\$1,000	\$4,425	\$4,925	\$1,500	\$15,446
(b) Oper. Exp. Funded equip.	0	0	0	0	0	0	0	0	0	0
(c) Inventories	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
<b>Total facility costs (Federal &amp; non federal)</b>	\$ 0	\$ 0	\$ 0	\$1,696	\$1,900	\$1,000	\$4,425	\$4,925	\$1,500	\$15,446
(2) Other project costs										
(a) R&D Necessary to complete project	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
(b) Conceptual design costs	350	0	0	0	0	0	0	0	0	350
(c) Decontamination & Decommissioning (D&D)	0	0	0	0	0	0	0	0	0	0
(d) NEPA Documentation Costs	0	0	11	5	0	0	0	0	0	16
(e) Other proj-related costs	0	0	190	69	101	117	326	296	100	1,199
Total other proj-costs	<u>350</u>	<u>0</u>	<u>201</u>	<u>74</u>	<u>101</u>	<u>117</u>	<u>326</u>	<u>296</u>	<u>100</u>	<u>1,565</u>
<b>Total project costs</b>	\$ 350	\$ 0	\$ 201	\$1,770	\$2,001	\$1,117	\$4,751	\$5,221	\$1,600	\$17,011
(f) Non Federal Contribution	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Net Federal Total Project Cost (TPC)	\$ 350	\$ 0	\$ 201	\$ 1,770	\$ 2,001	\$ 1,117	\$ 4,751	\$ 5,221	\$1,600	\$17,011

## CONSTRUCTION PROJECT DATA SHEETS

1. Title and location of project: TRA Fire and Life  
Safety Improvements  
Idaho National Engineering  
Laboratory, Idaho

2a. Project No.: 95-E-201

2b. Construction Funded

11. Schedule of project funding and other related funding requirements (continued):

b. Related Annual Costs

(1) Total facility operating costs .....	\$	1
(2) Facility maintenance and repair costs .....		0
(3) Programmatic operating expenses directly related to the facility .....		10
(4) Capital equipment not related to construction but related to the programmatic effort in the facility .....		0
(5) GPP or other construction related to the programmatic effort in the facility .....		0
(6) Utility Costs .....		0
(7) Other Costs .....		0
<b>Total related annual funding .....</b>	<b>\$</b>	<b>11</b>

12. Narrative explanation of total project funding and other funding requirements:

a. Total Project Costs

- (1) Total facility cost - The total facility cost is based upon the conceptual design that was completed in February 1992 with schedule and escalation revised in December 1992. The Conceptual Design Cost Estimate was prepared utilizing the INEL Cost Estimating Manual and DOE Order 5700.2C.
  - (a) Line item - Narrative not required.
  - (b) Operating Expenses funded equipment - Narrative not required.
  - (c) Inventories - Narrative not required.



## NUCLEAR ENERGY R&D

### ATR FUSION IRRADIATIONS

(Dollars in Thousands)

#### I. Mission Supporting Goals and Objectives

Because the Fast Flux Test Facility (FFTF) and the Experimental Breeder Reactor-II (EBR-II) are not operational, the Advanced Test Reactor (ATR) has been selected as the facility to conduct fusion program materials irradiation experiments. In accordance with an agreement with the Office of Energy Research (ER), Nuclear Energy (NE) will design, fabricate and install a suitable test vehicle for the fusion materials irradiation test program in the ATR.

The current effort to fabricate and install the test vehicle started in FY 1995 and is scheduled to be completed in FY 1998. Following completion of the test vehicle, irradiation experiments, funded by ER, will be conducted. The primary focus of the initial irradiation testing program will be to test advanced materials which are candidates for the structural components in the fusion system's first wall. The first series of irradiation tests will honor the commitment made by the Department to complete the program involving an international collaboration effort with Monbusho of Japan. After this initial commitment is completed, further fusion program testing in ATR is expected and will continue to be funded by ER. FY 1998 is the last year that NE expects to request funding for this program.

#### II. Funding Schedule

<u>Program Activity</u>	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>\$ Change</u>	<u>% Change</u>
ATR Fusion Irradiations	<u>\$2,282</u>	<u>\$800</u>	<u>\$2,000</u>	<u>+\$1,200</u>	<u>+150</u>
<b>TOTAL, ATR Fusion Irradiations</b>	<b><u>\$2,282</u></b>	<b><u>\$800</u></b>	<b><u>\$2,000</u></b>	<b><u>+\$1,200</u></b>	<b><u>+150</u></b>

III. Performance Summary - Major Accomplishments:

ATR Fusion Irradiations

	<b><u>FY 1996</u></b>	<b><u>FY 1997</u></b>	<b><u>FY 1998</u></b>
• Continue design of the irradiation test assembly for the fusion irradiation program.	\$2,282	\$0	\$0
• Complete design and continue fabrication of the fusion materials irradiation test vehicle.	\$0	\$800	\$0
• Complete fabrication, installation and testing of the fusion materials irradiation test vehicle.	\$0	\$0	\$2,000
Total ATR Fusion Irradiations	<b><u>\$2,282</u></b>	<b><u>\$800</u></b>	<b><u>\$2,000</u></b>

Explanation of Funding Changes From FY 1997 To FY 1998

Increase in FY 1998 to complete the irradiation test vehicle	\$+ 1,200
--	-----------

## NUCLEAR ENERGY R&D

### UNIVERSITY NUCLEAR SCIENCE AND REACTOR SUPPORT

(Dollars in Thousands)

#### I. Mission Supporting Goals and Objectives

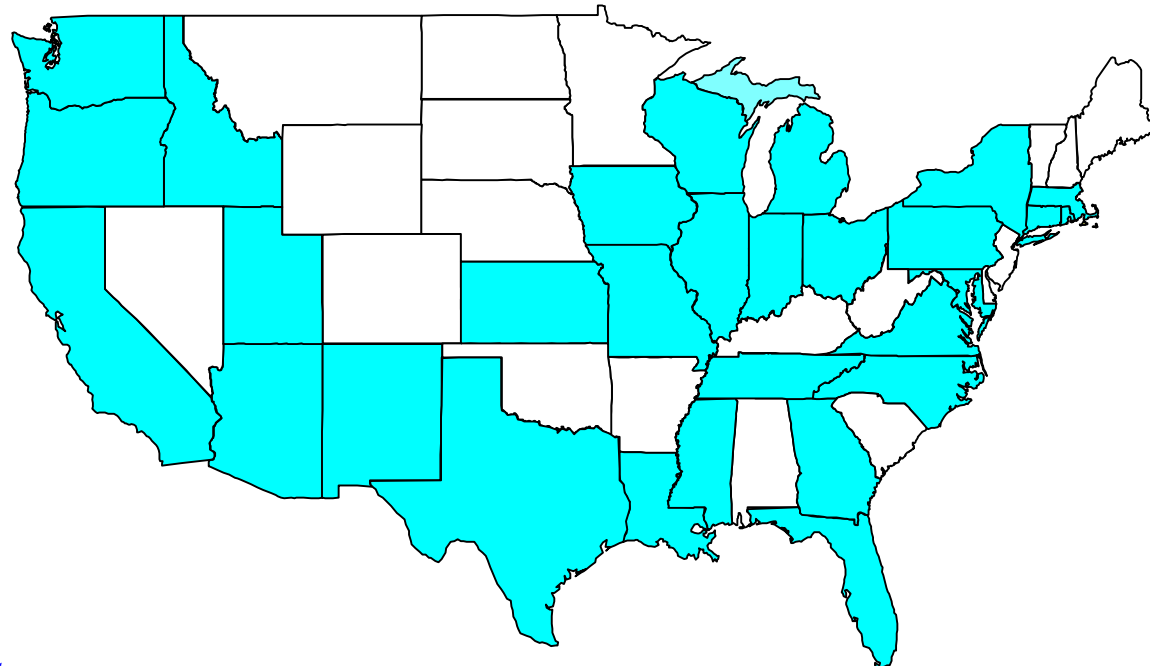
In order to maintain the capability in the U. S. to conduct research, address pressing environmental challenges, and preserve the nuclear energy option, the ability to adequately educate and train personnel in nuclear sciences and technology is vital. Our universities and university research reactors play a major role in providing this education and training.

University research reactors in the United States form a fundamental and vital component in a broad spectrum of our national research and education infrastructure critical to many national priorities such as health care, education, environment and technology transfer. Currently, there are 34 operating university research reactors on 32 campuses in 25 states. University reactors are the source of neutrons for research in such diverse areas as medical isotopes, human health, life sciences, environmental protection, advanced materials, nuclear pumped lasers, energy conversion and food science. University research reactors provide highly qualified, technically knowledgeable personnel needed by national laboratories, the federal government, academia, and private industry for basic and applied research critical to U.S. technological competitiveness. As such, they are the centers of multidisciplinary research efforts in the fields of chemistry, biology, medicine, epidemiology, archeology, environmental sciences, material sciences, fluid mechanics, geology, energy production and many other areas. University research reactors are used for laboratory instruction in all these fields with emphasis on radiation measurement, reactor science and engineering, and applications of radiological techniques. Many of the reactors serve as centers for pre-college education programs offered for high school students and teachers who come to the reactor for instructional programs and research. University research reactors also contribute to the educational base of future scientists and engineers in the above mentioned broad range of disciplines that use reactor based techniques to solve unique problems.

The University Nuclear Science and Reactor Support program provides funding for activities that benefit science education at the U.S. colleges and universities listed below, with emphasis on nuclear science and technology. These activities include: supplying fresh fuel to university reactors; allowing students and faculty at universities that do not operate nuclear reactors to have access to university reactors for research and training through the Reactor Sharing Program; partnering with private companies in funding university nuclear engineering programs through the Matching Grants Program; supporting university reactor maintenance and upgrades, to ensure that these valuable educational and research tools are available into the next decade; providing fellowships to outstanding Masters of Science and Doctor of Philosophy students to help ensure that our country will have an adequate supply of trained nuclear scientists and engineers; and supporting science education at minority institutions by sponsoring fellowships, cooperative education programs with students, a professorship, and research support. This program also supports the conversion of university reactors that use highly enriched uranium fuel to low enriched uranium fuel, as required by 10 CFR 50.64. The activities of this program now include the Nuclear Engineering Research Grants program as recommended by the FY 1997 House/Senate Appropriation Conference Committee.

A significant increase over the FY 1997 appropriation for this program is required for several reasons. The Department has planned since FY 1996 to initiate a program to assist in the maintenance and upgrade of experimental capabilities at university research reactors, but has been unable to do so due to lack of funds. As a result, the FY 1998 request includes funding for a growing list of maintenance and upgrade items. Also, as mentioned above, the FY 1997 House/Senate Appropriation Conference Committee recommended that the Nuclear Engineering Research Grants program be re-established. The FY 1998 request covers re-establishment of the program. Finally, the FY 1997 appropriation did not provide enough funding to fully fund the Reactor Sharing and Nuclear Engineering/Health Physics Fellowship programs. The FY 1998 request will allow the Department to fully fund these activities.

This line item provides for \$6 million in critically-needed funds to support facility, fuel, education, and related programs at American universities. In total the Office of Nuclear Energy, Science and Technology will provide approximately \$12.3 million in support of universities across the United States.



## Program Participants

Cornell University  
Georgia Institute of Technology  
Howard University  
Idaho State University  
Iowa State University  
Jackson State University  
Kansas State University  
Lincoln University  
Manhattan College  
Massachusetts Institute of Technology  
Morgan State University  
Morris College

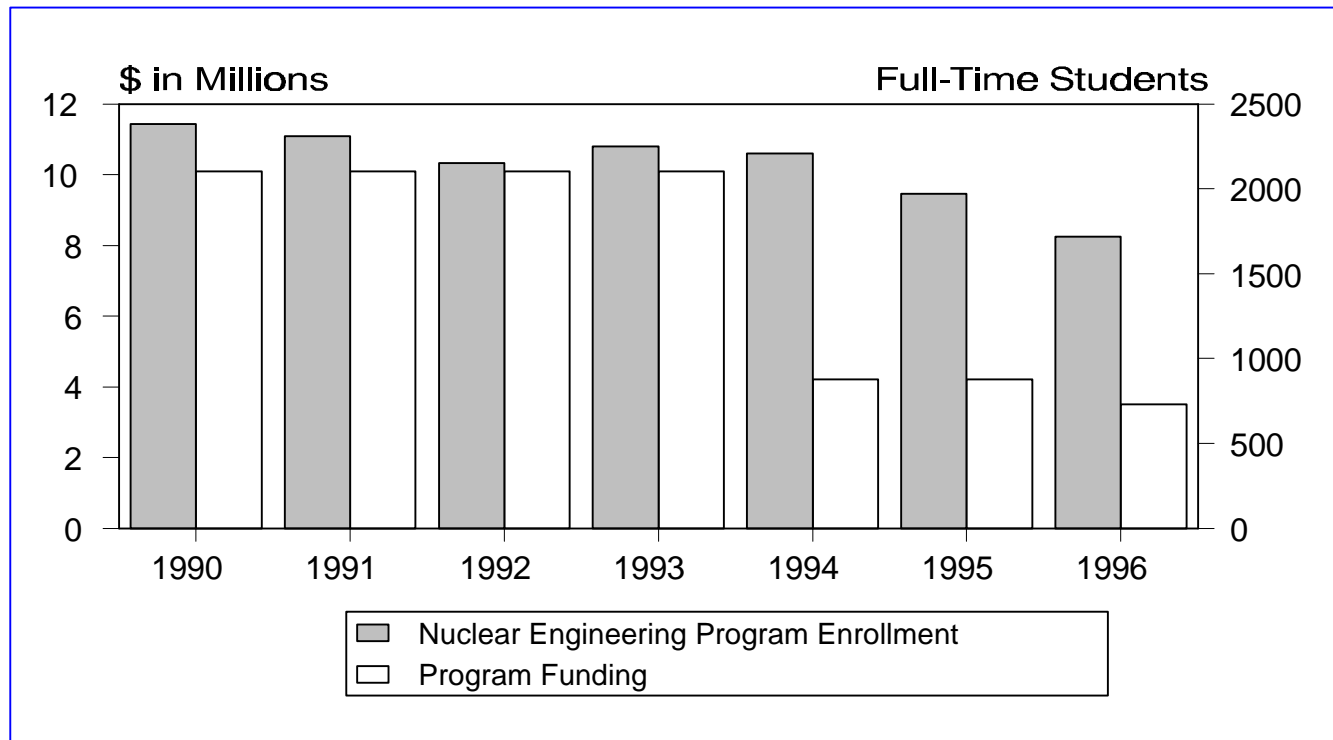
North Carolina State University  
North Carolina A&T State University  
North Carolina Central University  
Ohio State University  
Oregon State University  
Pennsylvania State University  
Prairie View A&M University  
Purdue University  
Reed College  
Rensselaer Polytechnic Institute  
Rhode Island Nuclear Science Center  
Tennessee State University

Texas A&M University  
University of Arizona  
University of California-Berkeley  
University of California-Irvine  
University of California-Los Angeles  
University of Cincinnati  
University of Florida  
University of Illinois  
University of Maryland  
University of Massachusetts-Lowell  
University of Michigan  
University of Missouri-Columbia

University of Missouri-Rolla  
University of New Mexico  
University of Tennessee  
University of Texas  
University of Utah  
University of Virginia  
University of Wisconsin  
Virginia State University  
Washington State University  
Worcester Polytechnic Institute  
Xavier University of Louisiana

## II. Funding Schedule

<u>Program Activity</u>	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>\$ Change</u>	<u>% Change</u>
University Nuclear Science and Reactor Support	<u>\$ 3,492<sup>1</sup></u>	<u>\$ 4,000</u>	<u>\$6,000</u>	<u>\$2,000</u>	<u>50</u>



*Enrollment in nuclear engineering programs has declined by nearly 25% since 1993, as Federal support for these programs has been cut.*

<sup>1</sup>

An additional \$1,000,000 was made available from several Nuclear Energy Research and Development programs to support HBCU's and NE&HP fellowships in FY 1996.

**III. Performance Summary - Major Accomplishments:****FY 1996****FY 1997****FY 1998****University Nuclear Science and Reactor Support**

• Supply fresh fuel to and ship spent fuel from multiple university reactors. Complete the conversion of the Georgia Tech and University of Massachusetts-Lowell reactors from HEU to LEU fuel in FY 1996.	\$2,192	\$2,000	\$2,400
• Continue the Matching Grants Program, which supports education, training, and innovative research at participating universities. Provide grants of up to \$50,000 to 17 universities in FY 1996 and FY 1997, which will be matched by industry. Conduct an evaluation of the five year trial of the matching grants program in FY 1997. It is anticipated that the evaluation will recommend continuation and expansion of the program in FY 1998.	\$800	\$700	\$1,000
• Provide fellowships for outstanding and promising United States M.S. and Ph.D. students engaged in nuclear science research and training at multiple U.S. universities. Twenty-two fellowships were provided in FY 1996, twelve were provided in FY 1997, and twenty-two are planned for FY 1998.	<sup>1</sup>	\$500	\$800
• Support a faculty position at Morgan State University to teach nuclear engineering to students from Morgan State, Coppin State, and Bowie State. Provide support to outstanding undergraduate and graduate level students pursuing degrees in scientific or technical fields at Historically Black Colleges and Universities. Promote the advancement of science and technical education at Hispanic Serving Institutions.	<sup>1</sup>	\$400	\$500
• Continue the Reactor Sharing Grants program. This program allows students and faculty at institutions without reactors to have access to university reactors for training, education, and research purposes. The program also allows the universities with reactors to conduct educational outreach programs in their local communities.	\$500	\$400	\$500
• Initiate program to assist in the maintenance and upgrading of university-owned research reactors. The program would provide for replacement of outdated equipment, maintenance of reactor systems, and upgrading of experimental capabilities at U.S. university reactors. The purpose of this program is to ensure that these valuable educational and research tools are available into the next decade.	\$0	\$0	\$300
• Reinstate the Nuclear Engineering Research Grants Program as recommended by the FY 1997 House/Senate Appropriation Conference Committee.	\$0	\$0	\$500
Total University Nuclear Science and Reactor Support	<u>\$3,492</u>	<u>\$4,000</u>	<u>\$6,000</u>

---

<sup>1</sup> An additional \$1 million was made available from several Nuclear Energy Research and Development programs to support Nuclear Engineering/Health Physics fellowships and Historically Black Colleges and Universities and Hispanic Serving Institutions in FY 1996.

**EXPLANATION OF FUNDING CHANGES FROM FY 1997 TO FY 1998:**

• Initiate a program to assist in the maintenance and upgrading of university-owned research reactors.	+\$300
• Supply fresh fuel for one additional reactor.	+\$400
• The number of fellows sponsored in the Nuclear Engineering and Health Physics program in 1997 was reduced from 22 to 12. The requested increase will allow DOE to restore to 22 the number of fellows supported in 1998.	+\$300
• Renew and expand the DOE/Utility Matching Grants program, so that more universities and utilities may participate.	+\$300
• Increase Reactor Sharing program to increase access to reactors for research and training by students and faculty from universities without such facilities.	+\$100
• Expand efforts to help improve science and engineering education at Historically Black Colleges and Universities and Hispanic Serving Institutions.	+\$100
• Reinstate the Nuclear Engineering Research Grants program and support grants to universities conducting research in nuclear technologies.	<u>+\$500</u>
Total Funding Change, University Nuclear Science and Reactor Support	+2,000

## NUCLEAR ENERGY R&D

### NUCLEAR ENERGY SECURITY (Dollars in Thousands)

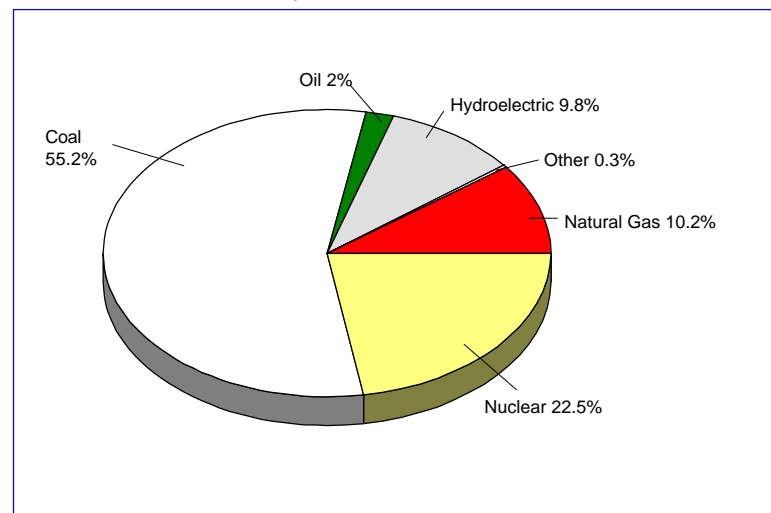
#### I. Mission Supporting Goals and Objective

The Department of Energy has a mission to assure that the U.S. has a flexible and diverse portfolio of energy supply options to fuel economic growth and enhance the quality of life for the American people. Nuclear energy currently provides about 22 percent of U.S. electricity generation and can be expected to contribute a significant portion of U.S. electrical energy production for many years to come. The importance of nuclear energy to U.S. energy supply now and in the future requires that the Department apply its unique resources, specialized expertise, and national leadership to address critical technology issues that could impact the continued operation of U.S. nuclear power plants. Most important will be the leadership that only the Federal Government can provide to bring together national laboratories, universities, electric utilities, and others in a new alliance to solve technology issues affecting the continued viability of existing U.S. nuclear power plants and the potential purchase of new plants in the next century.

Whether or not new nuclear power plants are built in the U.S. in the foreseeable future, the U.S. has a vital economic interest in maximizing its investment in its 109 nuclear power plants. These plants provide a stable, generally cost-effective, long-term source of baseload capacity without emitting harmful air pollutants. Specifically, nuclear power plants continue to make a significant contribution to lowering the emission of gases that are associated with global climate change. Because of the operation of nuclear power plants in the U.S., over 1,700 metric tons of carbon emissions were avoided between 1973 and 1994--this represents 90 percent of the carbon emissions avoided by the U.S. energy sector since 1973. In the future, particularly as the developing world increases its production and use of electricity, nuclear energy will be a key factor in the international strategy to reduce emissions of carbon dioxide and other gases. China, for example, plans to use nuclear power as a cornerstone of its energy strategy, as do Japan, South Korea, and other countries. All of these countries are expected to see significant increases in economic activity, quality of life, and electricity use in the next century. Over the next several decades, the use of nuclear energy will contribute more to keeping environmentally-harmful emissions in check than any other energy technology. As long as these plants can be operated in a safe and economic manner, they should continue to play a vital role in the U.S. energy picture. In deciding to propose this new program, the Department considered the following factors:

- **Nuclear Power Plants Generate More Than 22 Percent of the Nation's Electricity** - Nuclear energy is one of the top two producers of electricity in the U.S., second only to coal, with a generating capacity of over 100 gigawatts. In 1995, nuclear power plants produced 22.8 percent of the electrical power consumed in the U.S., displacing 658 billion kilowatt-hours fossil fuel generation and reducing the amount of carbon dioxide and other environmental pollutants emitted into the atmosphere. To replace these plants, the U. S. would have to build approximately 200 new fossil fuel plants.
- **Continued Growth in Electricity Demand** - Electricity consumption will continue to grow. The Energy Information Agency estimates a conservative electric consumption growth rate of 1.4 percent through the year 2015 equating to an increase of 142 gigawatts of new demand by the year 2015. This is the equivalent of placing 142 new 1,000 megawatt plants into operation in less than 18 years or approximately eight plants per year.
- **Nuclear Energy Represents a Large Financial Investment by the American Ratepayers** - The U.S. has 109 operating nuclear generation plants, representing an investment of over \$200 billion in the Nation's industrial infrastructure. This is a huge

*Fuel Shares of U. S. Electric Generation, 1995*

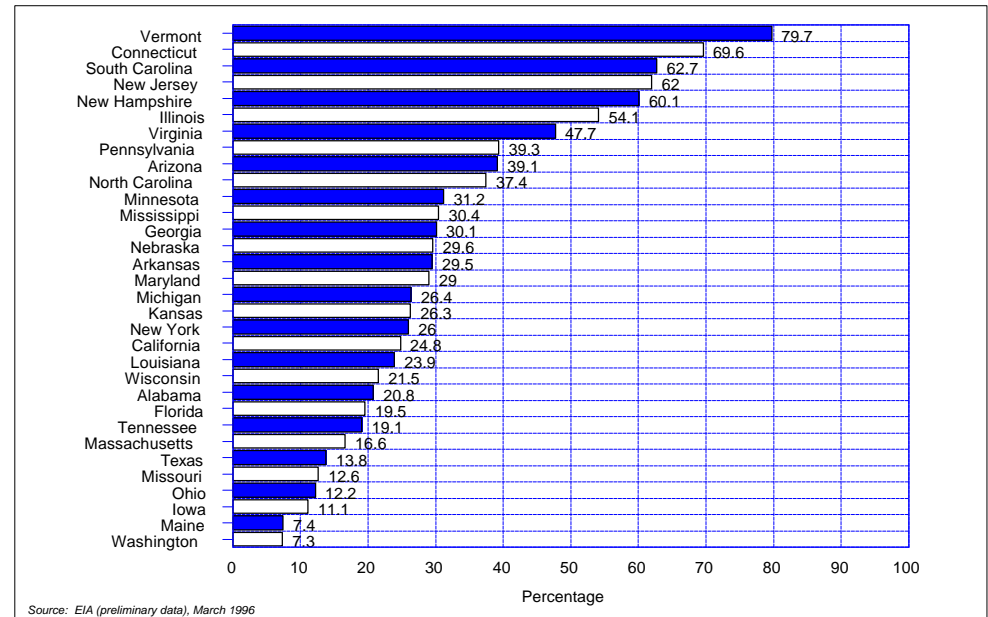
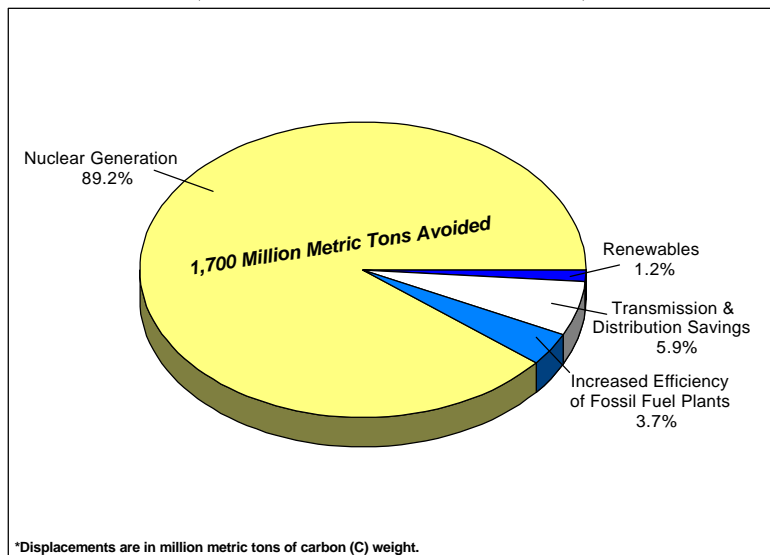




investment, representing about 25 percent of all electric utility investment in plant and equipment. Maximizing this investment is in the economic interests of the country.

- **Many States Are Highly Reliant on Nuclear Power** - Six states receive at least half of their electricity from nuclear power; 13 other states rely on nuclear for at least a quarter of their electricity. As a result, in many parts of the country, the early closure of nuclear plants could have substantial economic impacts as utilities are forced to make otherwise unnecessary investments in new plants or buy expensive power from other states or from Canadian nuclear and hydroelectric generators. The result of early plant closures for many states would be higher electricity rates and, potentially, unprecedented power shortages.
- **Nuclear Power Plants Do Not Emit Air Pollutants** - Current operating nuclear plants produce over 650 billion-kilowatt hours of electricity per year with no carbon, sulfur, or nitrous acid emissions.

#### Nuclear Power Contribution to CO<sub>2</sub> Emission Reductions\* (CO<sub>2</sub> Emissions Avoided 1973-1994)

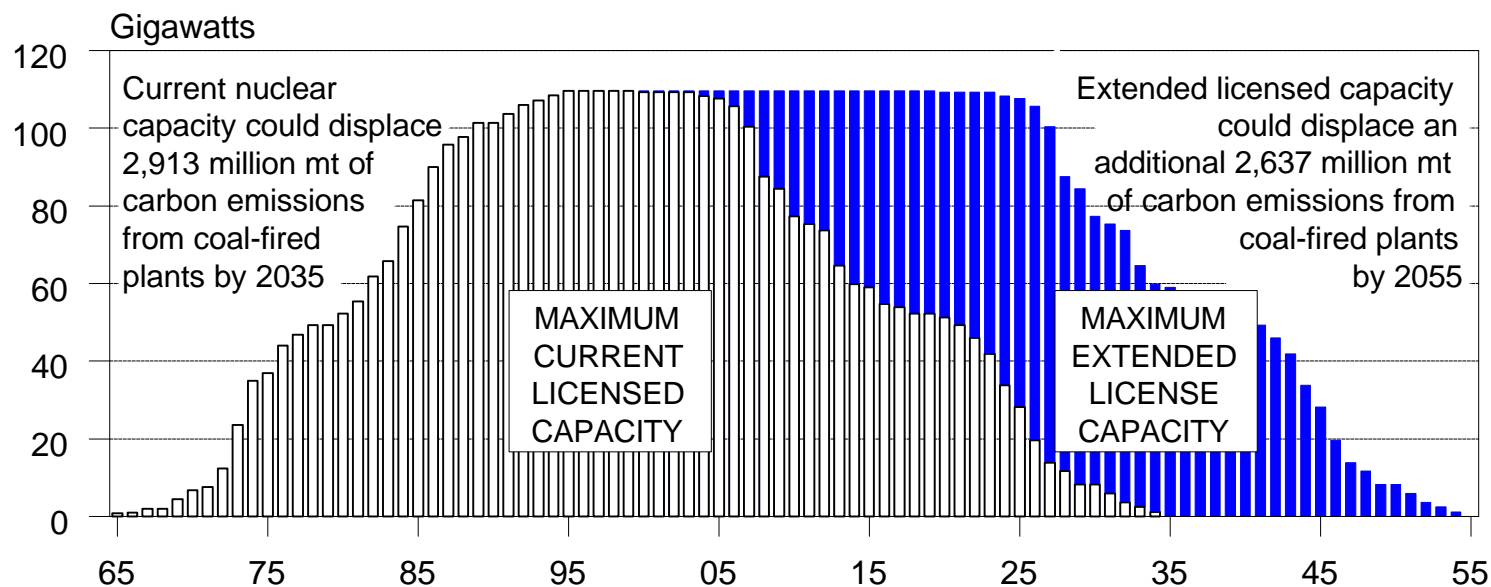


**Nuclear Electricity Generation by State, 1995**

Use of nuclear-generated electricity has avoided more than 1,700 million metric tons of carbon over the period 1973 to 1994 that would have been emitted by fossil fuel power plants--this represents about 90 percent of the carbon emissions avoided by the U.S energy sector since 1993.

- **U.S. Nuclear Plants Can Be Operated Economically**--If initial capital costs are included, most nuclear plants have a cost of power ranging between 5 and 7 cents per kilowatt-hour. This compares with an average electric-industry-wide generation cost of around 4.3 cents per kilowatt-hour. However, most U.S. nuclear power plants have actual nuclear electricity production costs (i.e., not including debt service) of around 1 to 2 cents per kilowatt-hour.

- The U.S. Faces a Potential Energy Shortfall in the 21st Century** - If U.S. nuclear power plants are shut down at the end of their current licenses, the Energy Information Administration (EIA) projects that the equivalent of thirty 1,000 megawatt plants will have to be replaced in just the 5 years between 2010 and 2015. If fossil plant retirements are considered, the situation becomes much worse, requiring a total of 84 gigawatts of new generating capacity to be constructed by 2015 to replace retired electricity capacity.



*U. S. Nuclear Capacity Potential Additions and Retirements*

To address the issues associated with keeping our nuclear power plants operating well into the next century, the Department is initiating its Nuclear Energy Security program. This program will focus on the development of new technologies that will: 1) assure and enhance the continued safe, reliable, and economic operation of U.S. nuclear power plants beyond their current license period, and 2) reduce the environmental impact of nuclear plant operation by minimizing the generation of high level nuclear waste (spent fuel).

In addressing the first area, the Department will investigate new technologies to monitor and repair the effects of long-term operation on nuclear power plants. The effects of long-term neutron exposure to key core components, cables, and instrumentation are key examples of the areas in which the Department plans to perform research and development. Other items the Department will study include stress corrosion cracking phenomena, steam generator integrity, advanced diagnostic tools and inspection technologies, advanced instrumentation technologies, and severe accident management technology.

The second area of research will focus on the development of new technologies that will enable nuclear power plants to continue operating efficiently while generating far less spent nuclear fuel. While industry must deal with short-term technical issues associated with nuclear fuel, the Department has a longer-term interest in applying new technologies to optimize the efficiency and proliferation resistance of the once-through fuel cycle. Specific benefits of extending fuel burnup beyond that typical in the current maximum two year fuel reload cycle are: decreased generation of the number of spent nuclear fuel rods (less waste), fewer plant outages for refueling (better economics), and reduced worker exposure due to reduced fuel handling requirements (improved safety). These benefits could translate into billions of dollars of savings to ratepayers over the remaining lifetimes of existing U.S. nuclear power plants.

In addition to these benefits, the Federal Government has an interest in reducing the amount of spent nuclear fuel generated by U.S. utilities. As the Department works to establish a commercial and Federal spent fuel transportation, storage, and disposition capability, it is clear that reducing the amount of spent fuel that must be handled, will reduce the cost of the high-level waste program. Applying the expertise garnered by the Federal Government in a host of technology efforts--including extended burnup research, naval reactors fuel design, and the Reduced Enrichment for Research and Test Reactors Program--provides a basis for a new approach to reducing high-level waste costs, as well as, the costs to operate nuclear power plants in the U.S. The Department's program will use the unique capabilities of the U.S. International Nuclear Safety Center at Argonne National Laboratory, to coordinate investigations relevant to Federal Government technologies for application to this important mission.

The goals and objectives of the Spent Fuel Minimization R&D program are to reduce the amount of spent fuel generated in nuclear power plants and to improve safety and reliability of plant operations. Principal areas of research include resolving technical issues associated with the current high burnup fuel at the 60,000 MWD/MT limit, developing fuel performance data supporting 100,000 MWD/MT burnups and analyzing supporting Operations & Maintenance (O&M) criteria for implementation of extended fuel cycles.

In addition, many countries throughout the world are seeking to improve or expand their commercial nuclear capabilities. The U.S. has a unique opportunity to engage in cooperative activities with these countries to address critical technology issues. The Department's activities such as participation and collaboration in key international organizations and other nations will enhance the role of U.S. industry as it seeks to apply unique or advanced technologies to the concerns of the other governments. An additional element in maintaining U.S. global influence is to assure that the U.S. can fully fund its participation in the Nuclear Energy Agency (NEA). Currently, these costs are paid by the Department of State. In its FY 1998 request, the Department has identified funds that can be used to supplement State's funding if required.

To assist in the management and oversight of these R&D activities, the Department will consult with representatives from U.S. universities, national laboratories, electric utilities, and others. The Department will seek external guidance as to what R&D activities will be most beneficial while applying the unique capabilities of the Federal Government and effectively leveraging ongoing R&D activities at universities and in the private sector. In addition, the Department will assemble a task force of independent experts to review specific plans to implement the FY 1998 program of study and to advise how best to obtain the greatest benefits for the dollars invested. The Department will form a panel of independent experts to peer review management of the proposed FY 1998 program. This peer review panel will review the planned workscope, the selection of performers, and suggest modification and processes to improve the FY 1998 nuclear research and development program. The panel will also review the Department's efforts to apply innovative methods in collaborate and share costs with industry, national laboratories, and universities to assure that the Nation carries out a strong, coordinated research and development effort.

Close-out of the Advanced Light Water Reactor Design and First-of-a-Kind Engineering (FOAKE) Program provides the Department's Office of Nuclear Energy, Science and Technology with the opportunity to consider the nation's long-term R&D requirements to maintain a U.S. competency in world-class nuclear power technology. In order to establish a long-term plan to address these issues, the Department proposes to establish an independent expert panel to assess what long-term goals, priorities and strategy the U.S. should have for research and education in support of commercial nuclear power and what the respective roles of the Federal Government (including the national laboratories), industry and academia should be implementing such a strategy. The Department will create the panel early in 1997 and ask it to report to the Secretary by August 1997, so that its analysis and recommendations can be considered in formulation of the Department's FY 1999 budget. Copies of the group's final report will be made available to concerned members of Congress and the public.

The advisory committee will be asked to outline a strategic vision for research and education that would permit the U.S. to maintain nuclear power technology as an option for economic and safe production of electricity well into the next century. The committee will be asked to assess the appropriate roles of industry, universities, and the national laboratories in the context of such factors as constraints on Federal spending due to deficit reduction efforts, changes in the structure and economics of the domestic electric power industry with deregulation, uncertainties about the long-term solution to high-level waste storage, trends in the demand for new nuclear power generation capability at home and abroad, the aging of U.S. reactors and prospects for life extension, and the need for consolidation and possible enhancement of existing Federal and non-Federal research facilities. The committee will be asked to focus its efforts and recommendations for future Federal involvement (including program structure and program management) on its best assessment of society's needs in this area over the next several decades, without regard for the current configuration of programs and facilities. The recommended strategy should be designed to promote an open, competitive process for establishing programmatic priorities and selecting research projects for funding. The committee will be encouraged to consult broadly during its deliberations with interested and affected parties.

Finally, the Department is undertaking a new commitment to increase the support for nuclear energy research and development at U.S. universities and colleges. The Nuclear Energy Security request includes \$4.3 million to support university research. In total, the Office of Nuclear Energy, Science and Technology will support approximately \$12.3 million research efforts at universities across the U.S.

The Nuclear Energy Security program will fulfill the goals and objectives of the program by conducting technology efforts in the following important areas:

- Key Component Safety and Life Cycle Management
  - Reactor vessel integrity technologies,
  - Electrical cables degradation,
  - Equipment aging management,
  - Stress corrosion cracking of reactor internals,
  - Fatigue - components and piping,
  - Steam generator integrity,
- Nuclear Risk Management - severe accident technology
  - In-vessel retention of molten fuel,
  - In-vessel steam explosion resulting from core reflood,
  - Containment integrity,
- Advanced Instrumentation and Control System Technologies & Reliability
  - Digital I&C Systems
- Enhanced Man-Machine Interface Systems Engineering
- Advanced Diagnostic Tools and Inspection
- International R&D Collaboration

- Spent Fuel Minimization
  - Resolution of technical issues associated with current fuel burnup limits,
  - Development of high burnup fuel, cladding material, control rods, and other support structures,
  - Development and validation of mechanistic models for high burnup fuel behavior,
  - Fabrication and testing of advanced fuel forms,
  - Reconciliation operations and maintenance practices based on extended fuel operating cycles.

## II. Funding Schedule

<u>Program Activity</u>	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>\$ Change</u>	<u>% Change</u>
Nuclear Energy Security	\$ <u>0</u>	<u>\$0</u>	<u>\$39,761</u>	<u>\$+39,761</u>	<u>100</u>
<b>TOTAL, Nuclear Energy Security</b>	<b><u>\$ 0</u></b>	<b><u>\$0</u></b>	<b><u>\$39,761</u></b>	<b><u>\$+39,761</u></b>	<b><u>100</u></b>

## III. Performance Summary - Major Accomplishments:

### Nuclear Energy Security R&D

	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>
• Develop technologies to resolve key component safety and reliability issues, e.g., reactor pressure vessel annealing, equipment aging, mitigative technologies for stress corrosion cracking and radiation induced embrittlement in key reactor components	\$0	\$0	\$7,750
• Develop advanced instrumentation and controls, including developing and field testing prototype advanced man/machine interface systems	\$0	\$ 0	\$7,250
• Develop advanced in-service inspection, monitoring, and repair technology, diagnostic tools and techniques, and non-destructive examination equipment	\$0	\$0	\$3,850
• Promotes international collaboration, including operation of the United States International Nuclear Safety Center, and maintaining a comprehensive International Nuclear Safety Database	\$0	\$0	\$4,500
• Conduct severe accident R&D to enhance the safety of nuclear power plants world-wide	\$0	\$0	\$2,000
• Resolve current issues with high burnup on existing fuel design	\$0	\$0	\$1,000
• Assess technology and licensing issues related to extending current commercial fuel enrichment to approximately five percent U-235	\$0	\$0	\$1,100
• Assess the implications of higher enrichments (mainly criticality) on fuel fabrication, complete a candidate design for greater-than 5 percent enriched fuel	\$0	\$0	\$2,700
• Determine the effects of higher enrichments and higher burnups on spent fuel pool and dry storage areas in terms of both criticality and heat dissipation, establish criteria to support long-term dry storage of high burnup fuel, evaluate implications for cask-to-cask transfer for ultimate disposal in a high-level waste repository	\$0	\$0	\$1,300

## III. Performance Summary - Major Accomplishments: -continued

FY 1996      FY 1997      FY 1998

• Establish technical basis, requirements and operational limitations of the various fuel cycle options: fuel costs, waste storage costs, increased availability, and O&M costs	\$0	\$0	\$500
• Design early test specimens using first generation high burnup fuel performance models	\$0	\$0	\$1,500
• Identify and resolve nuclear safety issues by conducting cooperative R&D programs including collaboration with U.S. representation in, and if required, membership costs for international agencies such as the International Atomic Energy Agency and the OECD Nuclear Energy Agency.	\$0	\$0	\$2,000
• Support university research and development in areas including advanced instrumentation and control systems, man-machine interface systems, plant management optimization, and extended burnup fuel technology.	\$0	\$0	\$4,311
<hr/>			
Total Nuclear Energy Security	<u>\$0</u>	<u>\$0</u>	<u>\$39,791</u>

EXPLANATION OF FUNDING CHANGES ROM FY 1997 TO FY 1998:

Initiating a new program. This program will apply resources, expertise, and facilities unique to the Federal Government to address technology vulnerabilities in the Nation's ability to maximize its investment in its 109 nuclear power plants and to improve the safety of nuclear power plants world-wide. External guidance from national laboratories, universities, utilities and others will be sought to assure that activities conducted by the program cannot be accomplished more effectively by private industry.

DEPARTMENT OF ENERGY  
FY 1998 CONGRESSIONAL BUDGET REQUEST  
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT  
(Tabular dollars in thousands, Narrative in whole dollars)

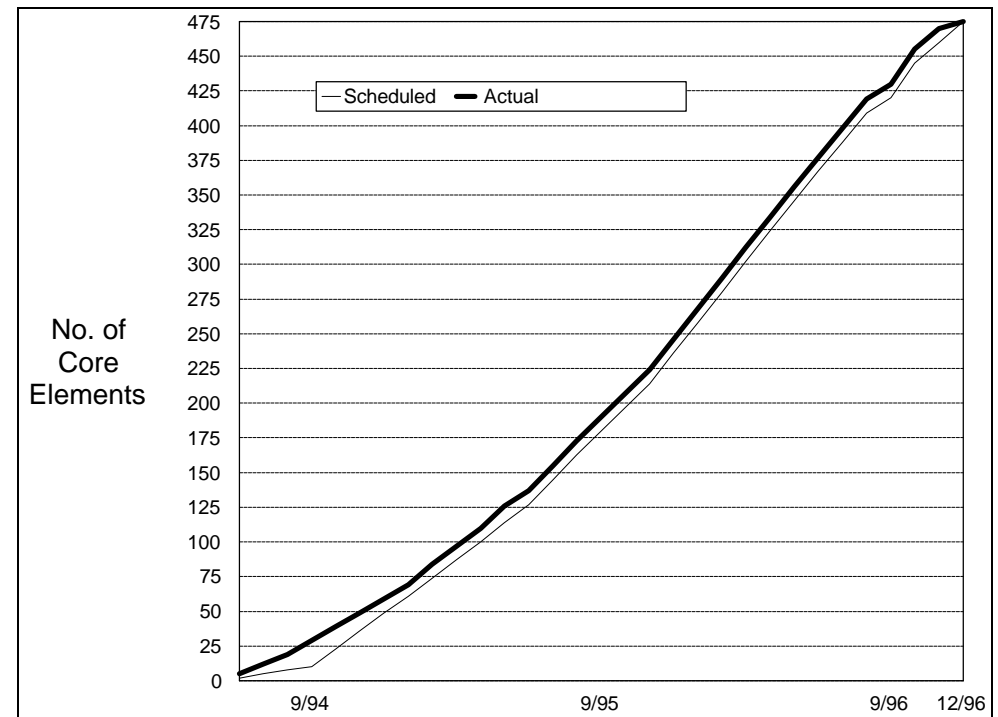
OFFICE OF NUCLEAR ENERGY, SCIENCE AND TECHNOLOGY  
TERMINATION COSTS

PROGRAM MISSION

The Termination Costs program provides funding to cost-effectively shut down terminated Federal programs and conduct the activities necessary to place unneeded Federal nuclear research facilities into an industrially and radiologically safe shutdown condition. Shutdown activities are currently underway at the Experimental Breeder Reactor II (EBR-II) and other surplus facilities at the Argonne National Laboratory-West (ANL-W) site near Idaho Falls, Idaho. The shutdown activities include defueling the EBR-II core; draining the sodium coolant from EBR-II; sealing the EBR-II primary and secondary cooling systems; demonstrating treatment of the EBR-II spent fuel and blanket subassemblies; and processing the EBR-II and other sodium in the Sodium Process Facility (SPF).

The Office of Nuclear Energy, Science and Technology is also responsible for managing transition of the Fast Flux Test Facility (FFTF) located in the 400 Area at the Hanford, Washington site. This program is funded in the Environmental Restoration and Waste Management (EM) budget. The FFTF is a 400 megawatt, sodium-cooled, fast flux test reactor that became fully operational in 1982. The Secretary of Energy ordered the shutdown of the facility on December 15, 1993. The FFTF transition mission is to accomplish a radiologically and industrially safe shutdown by FY 2002. However, the Department has decided to maintain the FFTF in a hot standby condition until a decision can be made in 1998 on whether to use it as a source of tritium to meet stockpile requirements. Deactivation activities consistent with maintaining FFTF in hot standby will continue. The Department plans to submit an FY 1998 budget amendment to reflect this change.

The GOAL of the Termination Costs program is to place the EBR-II and other excess facilities into industrially and radiologically safe shutdown conditions.



***Defueling of EBR-II was completed on schedule  
on December 13, 1996.***



The Department's program to deactivate the EBR-II is proceeding on schedule, with the project to defuel the reactor completed in December 1996. The most important decision that must be made in coming years that will impact future budget requests is whether electrometallurgical treatment can be used to convert the sodium-bearing spent fuel from the EBR-II into a form suitable for long-term storage and ultimate disposal. The Department initiated a program to demonstrate the use of electrometallurgical technology in June 1996 and this program--which will treat up to 125 EBR-II spent fuel and blanket assemblies--is expected to be completed in early 1999.

If this technology development program proves successful and the Department decides to use electrometallurgical technology to treat remaining EBR-II spent fuel (an additional 960 assemblies located in Idaho), significant resources will be needed at the ANL-W site to conduct the treatment campaign. The table below provides an estimate of the budget requirements for the Termination Costs account out to FY 2003.

**Termination Costs Outyear Projection**  
(dollars in thousands)

	<b>FY 1998</b>	<b>FY 1999</b>	<b>FY 2000</b>	<b>FY 2001</b>	<b>FY 2002</b>	<b>FY 2003</b>
EBR-II Deactivation	68,700	59,000	48,500	47,900	47,400	42,700
ANL-W Waste/Site Management	1,835	5,000	5,000	5,000	5,000	5,000
ALWR Closeout Costs	5,500	0	0	0	0	0
<b>TOTAL</b>	76,035	64,000	53,500	52,900	52,400	47,700

A more aggressive treatment campaign would require a higher annual expenditure but would end sooner. Final decisions about how such a treatment campaign would be conducted cannot be made until the demonstration program provides more complete information about the capabilities of electrometallurgical treatment technology.

Also shown in the table, the Department plans to conduct waste management and other site activities at ANL-W while the EBR-II deactivation proceeds. The budgetary requirements for site management will ultimately depend on several future developments, including the methods chosen to treat wastes at the site to meet DOE commitments to the State of Idaho. The Department has also estimated the final costs to complete the closeout of the ALWR program.

The OBJECTIVES related to this goal are:

1. Deactivate surplus facilities in cooperation with other government entities.
2. Manage the safe storage, processing, and, in coordination with EM, the disposition of spent fuel and waste materials.
3. Place unneeded facilities into a safe shutdown condition requiring minimum surveillance and maintenance.

PERFORMANCE MEASURES:

- Conduct termination activities at ANL-W site in accordance with cost and baseline schedules established in the termination plan.
- Continue ANL-W site shutdown activities, including operation of facilities required to support shutdown, safely in accordance with applicable rules, regulations, approved safety documentation and DOE directives.

SIGNIFICANT ACCOMPLISHMENTS AND PROGRAM SHIFTS:

- In FY 1995, EBR-II operation at ANL-W was ceased and shutdown was initiated in October 1994. Shutdown activities include defueling of EBR-II, manufacturing and insertion of dummy subassemblies in EBR-II, and Fuel Conditioning Facility (FCF) modifications to enable treatment of spent fuel and blankets to place into a storable form.
- In FY 1995, shut down the Transient Reactor Test Facility (TREAT) at ANL-W.
- In FY 1996, defueling of EBR-II and preparations to treat spent fuel continued.
- In FY 1996, an Environmental Assessment and subsequent Finding of No Significant Impact was issued; this resulted in the initiation of the demonstration of electrometallurgical technology for treating EBR-II spent fuel and blankets.
- EBR-II defueling was completed in December 1996 and demonstration of electrometallurgical technology for treatment of fuel and blankets in the FCF was initiated in June 1996.
- In FY 1997, complete termination of the Gas Turbine-Modular Helium Reactor (GT-MHR) program.
- In FY 1998, complete closeout of the ALWR program.
- In FY 1998, continue shutdown of EBR-II and other unneeded ANL-W facilities, complete the draining and treatment of EBR-II sodium; and continue the fuel treatment demonstration.

TERMINATION COSTS

PROGRAM FUNDING PROFILE  
(Dollars in Thousands)

<u>Sub-program</u>	FY 1996 Current <u>Appropriation</u>	FY 1997 Original <u>Appropriation</u>	FY 1997 <u>Adjustments</u>	FY 1997 Current <u>Appropriation</u>	FY 1998 Budget <u>Request</u>
Termination Costs	\$78,911	\$79,100	\$0	\$79,100	\$76,035
<b>TOTAL, Termination Costs</b>	<b><u>\$ 78,911</u></b>	<b><u>\$ 79,100</u></b>	<b><u>\$0</u></b>	<b><u>\$79,100</u></b>	<b><u>\$76,035</u></b>

TERMINATION COSTS

PROGRAM FUNDING BY SITE

(Dollars in Thousands)

<u>Laboratory/Plant/Installation</u>	FY 1996 Current <u>Appropriation</u>	FY 1997 Original <u>Appropriation</u>	FY 1997 <u>Adjustments</u>	FY 1997 Current <u>Appropriation</u>	FY 1998 Budget <u>Request</u>
Chicago Operations Office					
Argonne National Laboratory -(East)	\$2,600	\$1,800	\$0	\$1,800	\$0
Argonne National Laboratory-(West)	66,300	69,430	0	69,430	69,035
Other	280	0	0	0	0
Idaho Operations Office					
Idaho National Engineering Laboratory	75	0	0	0	0
Oakland Operations Office					
Energy Technology Engineering Center	910	0	0	0	0
General Atomics	5,740	3,250	0	3,250	0
Stone & Webster Engineering Corporation	190	0	0	0	0
Combustion Engineering	280	0	0	0	0
Bechtel National, Inc.	60	0	0	0	0
Oak Ridge Operations Office					
Oak Ridge National Laboratory	1,035	2,500	0	2,500	0
Oak Ridge Associated Universities	108	0	0	0	0
Other	20	0	0	0	0
All Other Sites	<u>1,313</u>	<u>2,120</u>	<u>0</u>	<u>2,120</u>	<u>7,000</u>
<b>TOTAL</b>	<b><u>\$78,911</u></b>	<b><u>\$79,100</u></b>	<b><u>\$0</u></b>	<b><u>\$79,100</u></b>	<b><u>\$76,035</u></b>

OFFICE OF NUCLEAR ENERGY, SCIENCE AND TECHNOLOGY  
CAPITAL OPERATING EXPENSES AND CONSTRUCTION SUMMARY

TERMINATION COSTS  
(Dollars in Thousands)

<u>Capital Operating Expenses</u>	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>\$ Change</u>	<u>% Change</u>
General Plant Project (GPP)	\$ 0	\$1,500	\$2,500	\$+1,000	+66
Modifications to Reactors	\$1,700	\$2,700	\$ 0	\$-2,700	-100
Capital Equipment	\$3,000	\$1,000	\$1,000	\$ 0	0

TERMINATION COSTS  
(Dollars in Thousands)

I. Mission Supporting Goals and Objective

Complete defueling and closure of the EBR-II and the shutdown of other surplus ANL-W site facilities.

II. Funding Schedule

<u>Program Activity</u>	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>\$ Change</u>	<u>% Change</u>
Gas Turbine-Modular Helium Reactor	\$ 7,500	\$ 6,000	\$ 0	\$ -6,000	-100
Argonne National Laboratory West	68,900	71,230	69,035	-2,195	-3
Advanced Light Water Reactor Program	0	0	5,500	+5,500	100
Other	<u>2,511</u>	<u>1,870</u>	<u>1,500</u>	<u>-370</u>	<u>-19</u>
<b>TOTAL, Termination Costs</b>	<b><u>\$ 78,911</u></b>	<b><u>\$ 79,100</u></b>	<b><u>\$76,035</u></b>	<b><u>\$-3,065</u></b>	<b><u>-3</u></b>

### III. Performance Summary - Major Accomplishments:

**FY 1996**      **FY 1997**      **FY 1998**

#### Gas Turbine-Modular Helium Reactor

• In FY 1996, GT-MHR contracts with Stone & Webster Engineering, Bechtel National, and Combustion Engineering were closed out; GT-MHR closeout plan developed and implemented at General Atomics, LaJolla, California.	6,500	0	0
• In FY 1996, GT-MHR closeout plan developed and implemented at Oak Ridge National Laboratory (ORNL).	1,000	0	0
• Complete the collection, inventory, and disposition of DOE owned GT-MHR research materials and equipment at the General Atomics owned facilities at LaJolla, California. 9/30/97.	0	2,700	0
• Complete the collection, inventory, and disposition of GT-MHR research materials, equipment, and facilities at ORNL. 9/30/97	0	3,300	0
Total GT-MHR	\$7,500	\$6,000	\$ 0

#### Argonne National Laboratory West

• Complete defueling of the EBR-II and handling of the removed assemblies.	32,970	17,930	12,595
• Complete modification, test and checkout of the SPF in FY 1997.	6,005	1,000	0
• Operate the SPF in support of site termination activities.	0	5,245	6,500
• Conduct the electrometallurgical technology demonstration in the FCF and develop data upon which to base future fuel conditioning decisions.	24,195	25,165	25,170
• Conduct surveillance and maintenance on shutdown facilities at the ANL-W site.	1,030	2,140	735
• Deactivate EBR-II systems.	0	14,550	15,775
• Provide for severance payments to reduce ANL-W site staffing in FY 1998.	0	0	2,925
• Replace and upgrade equipment necessary to support shutdown activities.	3,000	1,000	1,000
• Conduct capital projects required to support shutdown activities.	1,700	4,200	2,500
• Provide segregation, packaging and other waste management activities in support of site operations.	0	0	1,835
Total ANL-W	\$68,900	\$71,230	\$69,035

Advanced Light Water Reactor Program

- |  |     |     |         |
|--|-----|-----|---------|
| • Provide for closeout of the Advanced Light Water Reactor (ALWR) program, which eliminates any future liability for the Federal Government. | \$0 | \$0 | \$5,500 |
|--|-----|-----|---------|

Other

- |   |         |         |         |
|---|---------|---------|---------|
| • Conduct management studies and evaluations. | \$2,511 | \$1,870 | \$1,500 |
|---|---------|---------|---------|

Total Termination Costs	<u>\$78,911</u>	<u>\$79,100</u>	<u>\$76,035</u>
-------------------------	-----------------	-----------------	-----------------

Explanation of Funding Changes from FY 1997 to FY 1998:

Decrease in Termination Costs account due to completion of the GT-MHR closeout in FY 1997 and reduced funding to continue ANL-W shutdown activities in FY 1998 which are partially offset by inclusion of funding for ALWR program closeout in FY 1998.			-\$3,065
---	--	--	----------



DEPARTMENT OF ENERGY  
FY 1998 CONGRESSIONAL BUDGET REQUEST  
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT  
(Tabular dollars in thousands, Narrative in whole dollars)

OFFICE OF NUCLEAR ENERGY, SCIENCE AND TECHNOLOGY  
ISOTOPE SUPPORT

PROGRAM MISSION

The Isotope Support decision unit will fund a payment into the Isotope Production and Distribution (IP&D) program to assure adequate supplies of isotopes necessary for the national interest, and for supporting our health care system. Specifically, requested funding is required to maintain financial continuity of radioactive and stable isotope production, processing, distribution, and associated services to commercial and research customers. Funding will also be used to provide radioisotopes and enriched stable isotopes for research and development, medical diagnosis and therapy, and to support administrative activities.

The IP&D program operates under a revolving fund and program costs are financed by revenues from the sale of isotopes and services and through payments from the Isotope Support decision unit, which is funded through Congressional appropriations. The IP&D program has two major missions. First, the program provides certain low-volume isotopes for research and development, medical diagnoses and therapy, and other applications that are in the national interest. Prices charged for these products and services may not always achieve full-cost recovery to the Government. The second mission is to produce and distribute high-volume isotopes for medical, industrial, agricultural, and other useful applications on a business-like basis. To establish a firm production base and reduce unit product costs, multi-year (2-3 years) sales contracts with price escalation will be pursued on the largest revenue producing isotopes. The Department encourages private sector investment in new isotope production ventures and will sell or lease its facilities and inventories for commercial purposes. If private sector production becomes well established, DOE will no longer supply that isotope.

Many uses for isotopes have emerged over the past generation as an adjunct of nuclear research, defense, and power development programs. As the range of available isotopes and the recognized uses for them have increased, isotope applications have become necessary to achieve progress in medical research and practice, new industrial processes, and scientific methodology. Therefore, an adequate supply of medical and research isotopes is essential to maintain capabilities of the Nation's health care system, and to support the basic research and industrial applications that contribute to national economic competitiveness. The FY 1998 budget request under the Isotope Support decision unit is \$21.7 million. This budget request combined with projected revenues of \$12.0 million should provide the revolving fund sufficient funding to meet total estimated program expenses of \$33.7 million.

The Department is working to establish a domestic capability to produce molybdenum-99 (Mo-99) to provide the United States with a backup source of this vital isotope until a more reliable commercial source of supply—possibly through the privatization of the Department's program—becomes available. The Department's intent is not to compete with commercial suppliers and will end Federal support for Mo-99 production when reliable, secure alternatives become available. This isotope is used in over 36,000 medical procedures per day in the U.S. to diagnose maladies such as cancer and heart disease. The U.S. supply currently depends on a single aging reactor in Canada and the U.S. medical community has expressed concern about the reliability of supply. On September 11, 1996, the Department reached a decision to produce Mo-99 and related medical isotopes which will help ensure a stable supply of important medical isotopes needed to support the Nation's health care system. In early FY 1997, the Department produced several batches of Mo-99 quality evaluation samples after upgrading the existing hot cell selected for Mo-99 processing.

The GOAL of the Isotope Support program is to:

Provide financial viability of the IP&D program.

ISOTOPE SUPPORT

PROGRAM FUNDING PROFILE

(Dollars in Thousands)

<u>Sub-program</u>	FY 1996 Current <u>Appropriation</u>	FY 1997 Original <u>Appropriation</u>	FY 1997 <u>Adjustments</u>	FY 1997 Current <u>Appropriation</u>	FY 1998 Budget <u>Request</u>
Isotope Support					
Operating Expenses	<u>\$ 24,658</u>	<u>\$ 12,704</u>	<u>\$ 0</u>	<u>\$ 12,704</u>	<u>\$ 21,704</u>

# ISOTOPE SUPPORT

## PROGRAM FUNDING BY SITE (Dollars in Thousands)

<u>Laboratory/Plant/Installation</u>	<u>FY 1996 Current Appropriation</u>	<u>FY 1997 Original Appropriation</u>	<u>FY 1997 Adjustments</u>	<u>FY 1997 Current Appropriation</u>	<u>FY 1998 Budget Request</u>
Albuquerque Operations Office					
Los Alamos National Laboratory	\$ 1,500	\$ 1,000	\$ 0	\$ 1,000	\$ 1,400
Mound Plant	1,200	0	0	0	0
Sandia National Laboratories	12,000	5,000 <sup>1</sup>	0	5,000 <sup>1</sup>	9,000
Chicago Operations Office					
Brookhaven National Laboratory	1,100	1,000	0	1,000	2,600
Idaho Operations Office					
Idaho National Engineering Laboratory	600	0	0	0	0
Oak Ridge Operations Office					
Oak Ridge National Laboratory	2,200	1,000	0	1,000	3,000 <sup>2</sup>
Richland Operations Office					
Pacific Northwest Laboratory	400	750	0	750	750
All Other Sites	<u>5,658</u>	<u>3,954</u>	<u>0</u>	<u>3,954</u>	<u>4,954</u>
<b>TOTAL</b>	<b><u>\$24,658</u></b>	<b><u>\$12,704</u></b>	<b><u>\$0</u></b>	<b><u>\$12,704</u></b>	<b><u>\$21,704</u></b>

<sup>1</sup> Appropriation language mandated \$5.0 million for Mo-99. Funds to continue production operations were made available from higher than expected revenues from FY 1996 sales.

<sup>2</sup> Includes \$1.0 million for startup and process uranium-233 to obtain bismuth-213. Bismuth-213 is an isotope used in clinical trial to treat cancer. Includes \$1.0 million for extended Brookhaven Linear Isotope Producer runtime for accelerator research isotopes.

*Note: Since the Isotope Program operates like a business, funding at isotope production sites can increase or decrease depending on demand, cash collections, production efficiencies, and availability of facilities.*

ISOTOPE SUPPORT  
(Dollars in Thousands)

I. Mission Supporting Goals and Objective

The Department, through the IP&D program, provides radioactive and stable isotope products and associated services to a wide and varied domestic and international market. Ultimate applications of isotopes products include medical research and health care, industrial research and manufacturing, education, and national defense. The IP&D program has two primary missions. The first mission is to produce and distribute certain low-volume radioisotopes and enriched stable isotopes for research and development, medical diagnoses and therapy, and other applications that are in the national interest. The second mission is to produce and distribute high-volume radioisotopes and enriched stable isotopes that have profit potential for medical, industrial, and other useful applications on a business-like basis.

II. Funding Schedule

<u>Program Activity</u>	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>\$ Change</u>	<u>% Change</u>
Isotope Production & Distribution	\$10,716	\$ 6,704	\$10,904	\$+4,200	+62
Mo-99 Initiative	<u>12,000</u>	<u>5,000</u>	<u>9,000</u>	<u>\$+4,000</u>	<u>+80</u>
<b>TOTAL, Isotope Support (excluding Program Direction)</b>	<b><u>\$ 22,716</u></b>	<b><u>\$ 11,704</u></b>	<b><u>\$19,904</u></b>	<b><u>\$+8,200</u></b>	<b><u>+70</u></b>

### III. Performance Summary - Major Accomplishments:

#### Isotope Support

	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>
<ul style="list-style-type: none"> <li>Assure an adequate supply of isotopes to be used for medical diagnoses and therapy, other applications in the national interest, calutron operations to replenish inventories, and administrative activities.</li> <li>-- Achieve and maintain 95 percent on-time deliveries.</li> <li>-- Achieve gross profit of 15 percent in FY 1996, attain gross profit of 20 percent by September 1997, and maintain a 20 percent gross profit while reducing operating costs in FY 1998.</li> <li>-- Reduce and maintain the number of complaints to less than four percent of all deliveries made.</li> <li>-- Maintain financial viability of the IP&amp;D program.</li> <li>-- Issue four requests for proposals (RFP) for privatization of isotope activities by September 1997; hold RFP meetings and evaluate bids.</li> <li>-- Transfer or privatize Mound activities.</li> <li>-- Continue calutron operations for the production of stable isotopes.</li> <li>-- Provide quality products and services based on customer need.</li> <li>-- Response to customer requests for information within 48 hours.</li> <li>-- Revise the National Isotope Strategy by January 1997.</li> <li>-- Support research into new applications for use of radioisotopes and enriched stable isotopes.</li> </ul>	\$10,716	\$6,704	\$10,904
<ul style="list-style-type: none"> <li>Mo-99 Initiative</li> <li>-- Completed environmental impact statement and issued record of decision. Conducted production process verification and planning for facility design and modifications, waste disposal and equipment needs required to produce, process, and distribute Mo-99 and related medical isotopes.</li> <li>-- Maintain nuclear facility operations, produce Mo-99 quality samples for industry evaluation and continue process verification and improvement to update Drug Master File for Food and Drug Administration (FDA) approval process, and reconfigure reactor core for increased target irradiation capability.</li> <li>-- Maintain nuclear facility operations, complete Hot Cell Facility modifications to establish initial sustainable production capacity, and produce Mo-99 as required to seek FDA approval.</li> </ul>	\$12,000  \$0  \$0	\$0  \$5,000  \$0	\$0  \$0  \$9,000
Total Isotope Support	<u>\$22,716</u>	<u>\$11,704</u>	<u>\$19,904</u>

Explanation of Funding Changes From FY 1997 To FY 1998

- Budget supports initiating sustainable and emergency production of FDA approved Mo-99

\$+ 8,200

DEPARTMENT OF ENERGY  
FY 1998 CONGRESSIONAL BUDGET REQUEST  
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT  
(Tabular dollars in thousands, Narrative in whole dollars)

ISOTOPE SUPPORT  
PROGRAM DIRECTION

I. Mission Supporting Goals/Ongoing Responsibilities

The Program Direction account supports salaries, benefits, travel, and miscellaneous supplies or services to Headquarters and Operations Office personnel providing technical direction to the Office of Isotope Production and Distribution. This activity also includes funding for administrative expenses, such as: training, computer support, including hardware and software acquisitions, modifications, and other telecommunications services for workstations. In FY 1997 a Working Capital Fund (WCF) was established by the Department's Office of Human Resources and Administration to provide funding for mandatory administrative costs, such as rent and utilities. Funding is provided for the WCF in FY 1998.

NE Headquarters has aggressively streamlined operations. On-board staff have been reduced from 258 in August 1993 to a current level of 135 (a 48 percent reduction). The Office is also meeting other streamlining goals. For example, senior executive and GS 15/14 positions have been reduced by 49 percent; the employee to supervisor ratio has been increased from 3:1 to 13.1; overall NE Headquarters travel has been reduced by about 30 percent from FY 1995 and NE Headquarters support services contracting has been reduced by about 40 percent from FY 1995.

II. Funding Table

	FY 1996 Current <u>Appropriation</u>	FY 1997 Original <u>Appropriation</u>	FY 1997 <u>Adjustments</u>	FY 1997 Current <u>Appropriation</u>	FY 1998 Budget <u>Request</u>
<u>Summary - Budget</u>					
Headquarters	\$ 1,807	\$ 1,255	\$0	\$1,255	\$1,655
Field	<u>135</u>	<u>135</u>	<u>0</u>	<u>135</u>	<u>145</u>
<b>TOTAL, AVAILABLE BUDGET</b>	<b><u>\$ 1,942</u></b>	<b><u>\$ 1,390</u></b>	<b><u>\$0</u></b>	<b><u>\$1,390</u></b>	<b><u>\$1,800</u></b>
Adjusted-Unobligated/Uncosted					
Carryover	<u>0</u>	<u>-390</u>	<u>0</u>	<u>-390</u>	<u>0</u>
<b>NEW BUDGET AUTHORITY</b>	<b><u>\$1,942</u></b>	<b><u>\$1,000</u></b>	<b><u>\$0</u></b>	<b><u>\$1,000</u></b>	<b><u>\$1,800</u></b>



II. Funding Table - continued

	FY 1996 Current <u>Appropriation</u>	FY 1997 Original <u>Appropriation</u>	FY 1997 <u>Adjustments</u>	FY 1997 Current <u>Appropriation</u>	FY 1998 Budget <u>Request</u>
<u>Detailed Breakout</u>					
<u>Summary - Strategic Alignment Staffing</u>					
<u>Targets- continued</u>					
Headquarters End of Year Staffing					
Program Direction	114	103		103	87
<b>Isotope Production and Dist.</b>	<b>9</b>	<b>9</b>		<b>9</b>	<b>11</b>
Uranium Programs	<u>16</u>	<u>16</u>		<u>16</u>	<u>17</u>
TOTAL, HEADQUARTERS	139	128		128	115
Field End of Year Staffing					
Program Direction	31	29		29	30
<b>Isotope Production and Dist.</b>	<b>1</b>	<b>1</b>		<b>1</b>	<b>1</b>
Uranium Programs	<u>35</u>	<u>29</u>		<u>29</u>	<u>27</u>
TOTAL, FIELD	67	59		59	58
<u>Albuquerque</u>					
Salary and Benefits	\$ 130	\$130	\$0	\$130	\$135
Travel	5	5	0	5	10
Support Services	0	0	0	0	0
Other Related Expenses	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	\$ 135	\$135	\$0	\$135	\$145
End of Year Staffing	1	1		1	1
<u>Headquarters</u>					
Salary and Benefits	\$ 946	\$ 960	\$0	\$ 960	\$ 1,200
Travel	60	60	0	60	60
Support Services	701	225	0	225	235
Other Related Expenses	<u>100</u>	<u>10</u>	<u>0</u>	<u>10</u>	<u>160</u>
Total	\$ 1,807	\$ 1,255	\$0	\$ 1,255	\$ 1,655
End of Year Staffing	9	9		9	11
TOTAL AVAILABLE BUDGET	<u>\$ 1,942</u>	<u>\$ 1,390</u>	<u>\$0</u>	<u>\$ 1,390</u>	<u>\$ 1,800</u>
Adjustment-Unobligated/Uncosted					
Carryover	<u>0</u>	<u>-390</u>	<u>0</u>	<u>-390</u>	<u>0</u>
NEW BUDGET AUTHORITY	<u>\$1,942</u>	<u>\$ 1,000</u>	<u>\$0</u>	<u>\$ 1,000</u>	<u>\$ 1,800</u>

I. Performance Summary

#### FY 1996 Measurable Performance Activities:

The key benchmarks by which NE will measure its FY 1996 streamlining performance are:

- Reduced Headquarters staff to 144 (a 44 percent reduction since FY 1993), compared to a 28 percent reduction in program budgets
- Reduced senior executive positions to six (a 73 percent reduction since FY 1993) and reduced senior grade level (SES/15/14) positions by 44 percent since FY 1993
- Exceeded National Performance Review (NPR) streamlining goals to reduce administrative positions by 50 percent
- Increased the employee to supervisor ratio to 13:1
- Reduced Headquarters travel by about 30 percent from FY 1995 level
- Reduced reliance on support service contracts by about 40 percent from FY 1995 level

#### FY 1997 Measurable Performance Activities:

The key benchmarks by which NE will measure its FY 1997 streamlining performance are:

- Reducing senior executive positions to six (a 73 percent reduction since FY 1993), and reducing senior grade level (SES/15/14) positions by 52 percent since FY 1993
- Continue to exceed NPR streamlining goals to reduce administrative positions by 50 percent
- Exceeding DOE employee to supervisor ratio target of 11:1
- Continuing to reduce reliance on support service contractors by about 40 percent and to reduce Headquarters travel by about 30 percent from FY 1995 levels

IV. FY 1998 Measurable Performance Activities:

The key benchmark by which NE will measure its FY 1998 streamlining performance are:

- Reducing senior executive positions to six (a 73 percent reduction since FY 1993), and maintain overall reductions in senior grade level (SES/15/14) positions
- Continuing to exceed NPR streamlining goals to reduce administrative positions by 50 percent
- Exceeding the employee to supervisor ratio target of 11:1
- Initiate funding for the DOE Working Capital Fund (WCF)

Explanation of Funding Changes FY 1997 to FY 1998:

• Provide funding for the WCF	\$+140
• Salaries and benefits escalated in accordance with OMB guidance	\$+ 50
• Increase in salaries and benefits resulting from transfer of two staff positions from Nuclear Energy R&D	\$+225
• Increased operations office expenses	\$+ 10
• Increase attributable to use of prior year unobligated carryover funding in FY 1997	<u>\$+375</u>
Total	<u><u>\$+800</u></u>

# ISOTOPE SUPPORT

## Program Direction

Headquarters - Support Services  
(\$ in thousands)

<u>SUPPORT SERVICES-HQ</u>	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>Change</u>
Technical Support Services				
Environmental Analysis	\$ 541	\$ 225	\$ 235	\$ +10
Management Support Services				
Management Studies	<u>160</u>	<u>0</u>	<u>0</u>	<u>0</u>
 TOTAL SUPPORT SERVICES	 <u>\$ 701</u>	 <u>\$ 225</u>	 <u>\$ 235</u>	 <u>\$ +10</u>

# ISOTOPE SUPPORT

## Program Direction

### Headquarters - Other Related Expenses (\$ in thousands)

<u>OTHER RELATED EXPENSES</u>	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>Change</u>
Working Capital Fund	\$ 0	\$ 0	\$ 140	\$+ 140
ADP/TeleVideo Hardware and Software Procurement/Maintenance	90	0	0	0
Training	10	10	10	0
Other Miscellaneous Expenses	0	0	10	+ 10
TOTAL OTHER RELATED EXPENSES	<u>\$ 100</u>	<u>\$ 10</u>	<u>\$ 160</u>	<u>\$+ 150</u>

DEPARTMENT OF ENERGY  
FY 1998 CONGRESSIONAL BUDGET REQUEST  
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT  
(Tabular dollars in thousands, Narrative in whole dollars)

OFFICE OF NUCLEAR ENERGY, SCIENCE AND TECHNOLOGY  
ISOTOPE PRODUCTION AND DISTRIBUTION PROGRAM

PROGRAM MISSION

The Isotope Production and Distribution (IP&D) program provides radioactive and stable isotope products and associated services to a wide and varied domestic and international market. These products and services are provided using DOE facilities and scientific capabilities, many of which exist primarily to serve other Departmental missions.

The IP&D program operates under a revolving fund and program costs are financed by revenues from the sale of isotopes and services and through payments from the Isotope Support decision unit, which is funded through Congressional appropriations. The IP&D program has two major missions. First, the program provides certain low-volume isotopes for research and development, medical diagnoses and therapy, and other applications that are in the national interest. Prices charged for these products and services may not always achieve full-cost recovery to the Government. The second mission is to produce and distribute high-volume isotopes for medical, industrial, agricultural, and other useful applications on a business-like basis. To establish a firm production base and reduce unit product costs, multi-year (2-3 years) sales contracts with price escalation will be pursued on the largest revenue producing isotopes. The Department encourages private sector investment in new isotope production ventures and will sell or lease its facilities and inventories for commercial purposes. If private sector production becomes well established, DOE will no longer supply that isotope.

Many uses for isotopes have emerged over the past generation as an adjunct of nuclear research, defense, and power development programs. As the range of available isotopes and the recognized uses for them have increased, isotope applications have become necessary to achieve progress in medical research and practice, new industrial processes, and scientific methodology. Therefore, an adequate supply of medical and research isotopes is essential to maintain capabilities of the Nation's health care system, and to support the basic research and industrial applications that contribute to national economic competitiveness. The FY 1998 budget request under the Isotope Support decision unit is \$21.7 million. This budget request combined with projected revenues of \$12.0 million should provide the revolving fund sufficient funding to meet total estimated program expenses of \$33.7 million.

The Department is working to establish a domestic capability to produce molybdenum-99 (Mo-99) to provide the United States with a backup source of this vital isotope until a more reliable commercial source of supply—possibly through the privatization of the Department's program—becomes available. The Department's intent is not to compete with commercial suppliers and will end Federal support for Mo-99 production when reliable, secure alternatives become available. This isotope is used in over 36,000 medical procedures per day in the U.S. to diagnose maladies such as cancer and heart disease. The U.S. supply currently depends on a single aging reactor in Canada and the U.S. medical community has expressed concern about the reliability of supply. On September 11, 1996, the Department reached a decision to produce Mo-99 and related medical isotopes which will help ensure a stable supply of important medical isotopes needed to support the Nation's health care system. In early FY 1997, the Department produced several batches of Mo-99 quality evaluation samples after upgrading the existing hot cell selected for Mo-99 processing.

The GOAL of the IP&D program is to:

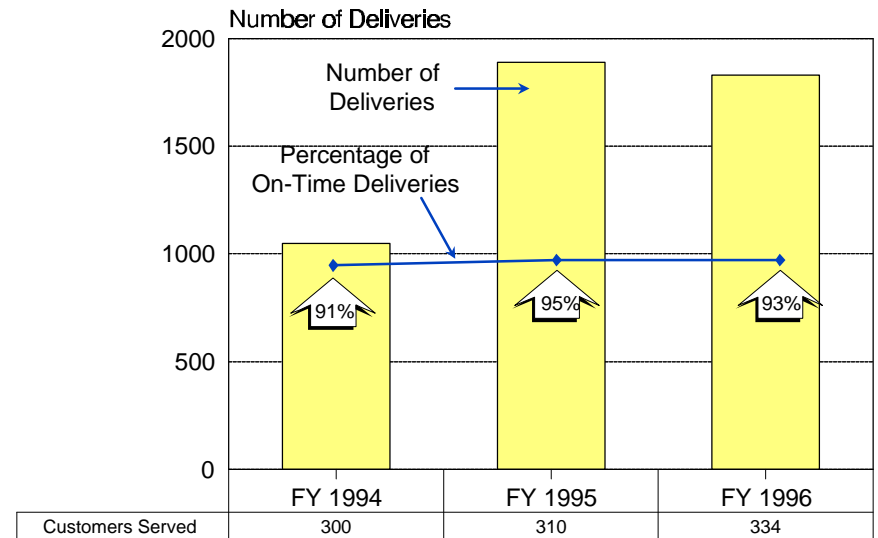
Maintain financial viability to ensure a reliable supply of medical, research, and industrial isotopes consistent with customer needs.

The OBJECTIVES related to these goals are:

1. Manage production and distribution of selected isotopes reliably and cost effectively in coordination with other isotope producers.
2. Develop improved means of producing and separating isotopes.
3. Promote privatization of isotope production and distribution.
4. Develop new use for isotopes.

#### PERFORMANCE MEASURES:

1. Privatize selected isotope activities by September 1997.
2. Achieve 95 percent on-time deliveries.
3. Achieve a 20 percent gross profit (i.e., the difference between revenues and costs of goods and services).
4. Respond to customer requests for information within 48 hours or less.
5. Keep customer complaints to less than four percent of all deliveries made.
6. Measure the difference between actual cost and schedule against approved baseline cost and schedule for Mo-99 start-up.



*Customers Served*

#### SIGNIFICANT ACCOMPLISHMENTS AND PROGRAM SHIFTS:

- Operate the calutrons cost-effectively to provide satisfactory customer demand.
- Retain 40 percent of worldwide sales of stable isotopes.
- Establish Cooperative Research and Development Agreements (CRADAs) or other appropriate agreements to achieve private sector participation.
- Continue to implement the Five Year Business Plan (FYBP). The FYBP will serve as a formal corporate plan on how and what will be accomplished within available resources and will integrate the planning and budget cycles.
- Maintain financial viability through its revenues and the Isotope Support appropriation.
- Continue privatization of selected isotope production activities.



# ISOTOPE PRODUCTION AND DISTRIBUTION PROGRAM

## PROGRAM FUNDING PROFILE

(Dollars in Thousands)

<u>Sub-program</u>	FY 1996 Current <u>Appropriation</u>	FY 1997 Original <u>Appropriation</u>	FY 1997 <u>Adjustments</u>	FY 1997 Current <u>Appropriation</u>	FY 1998 Budget <u>Request</u>
Isotope Production & Distribution Program	\$ 34,658	\$ 23,704	\$0	\$23,704	\$ 33,704
Less: Transfer from Isotope Support in Energy Supply R&D	-12,658	-7,704	0	-7,704	-12,704
Mo-99 Initiative	<u>-12,000</u>	<u>-5,000</u>	<u>0</u>	<u>-5,000</u>	<u>-9,000</u>
Revenues from Sales	<u>\$ 10,000</u>	<u>\$ 11,000</u>	<u>\$0</u>	<u>\$ 11,000</u>	<u>\$12,000</u>

# ISOTOPE PRODUCTION AND DISTRIBUTION

## PROGRAM FUNDING BY SITE

(Dollars in Thousands)

<u>Laboratory/Plant/Installation</u>	<u>FY 1996 Current Appropriation</u>	<u>FY 1997 Original Appropriation</u>	<u>FY 1997 Adjustments</u>	<u>FY 1997 Current Appropriation</u>	<u>FY 1998 Budget Request</u>	<u>FY 1998 Projected Revenues</u>
Albuquerque Operations Office						
Los Alamos National Laboratory	\$ 1,500	\$ 1,000	\$ 0	\$ 1,000	\$ 1,400	\$ 1,600
Mound Plant	1,200	0	0	0	0	0
Sandia National Laboratories	12,000	5,000 <sup>1</sup>	0	5,000 <sup>1</sup>	9,000	200
Chicago Operations Office						
Brookhaven National Laboratory	1,100	1,000	0	1,000	2,600	450
Idaho Operations Office						
Idaho National Engineering Laboratory	600	0	0	0	0	0
Oak Ridge Operations Office						
Oak Ridge National Laboratory	2,200	1,000	0	1,000	3,000 <sup>2</sup>	9,550
Richland Operations Office						
Pacific Northwest Laboratory	400	750	0	750	750	200
All Other Sites	<u>5,658</u>	<u>3,954</u>	<u>0</u>	<u>3,954</u>	<u>4,954</u>	<u>0</u>
<b>TOTAL</b>	<b><u>\$24,658</u></b>	<b><u>\$12,704</u></b>	<b><u>\$0</u></b>	<b><u>\$12,704</u></b>	<b><u>\$21,704</u></b>	<b><u>\$12,000</u></b>

<sup>1</sup> Appropriation language mandated \$5.0 million for Mo-99. Funds to continue production operations were made available from higher than expected revenues from FY 1996 sales.

<sup>2</sup> Includes \$1.0 million for startup and process uranium-233 to obtain bismuth-213. Bismuth-213 is an isotope used in clinical trial to treat cancer. Includes \$1.0 million for extended Brookhaven Linear Isotope Producer runtime for accelerator research isotopes.

*Note: Since the Isotope Program operates like a business, funding at isotope production sites can increase or decrease depending on demand, ash collections, production efficiencies, and availability of facilities.*

ISOTOPE PRODUCTION AND DISTRIBUTION PROGRAM  
(Dollars in Thousands)

I. Mission Supporting Goals and Objective

The Isotope Production and Distribution (IP&D) program provides radioactive and stable isotope products and associated services to a wide and varied domestic and international market. These products and services are produced, processed and provided using DOE facilities and scientific capabilities which exist to satisfy other Departmental research and production missions.

The IP&D program operates under a revolving fund and program costs are financed by revenues from the sale of isotopes and services and through payments from the Isotope Support decision unit, which is funded through Congressional appropriations. The IP&D program has two major missions. First, the program provides certain low-volume isotopes for research and development, medical diagnoses and therapy, and other applications that are in the national interest. Prices charged for these products and services may or may not achieve full-cost recovery to the Government. The second mission is to produce and distribute high-volume isotopes for medical, industrial, agricultural, and other useful applications on a business-like basis. To establish a firm production base and reduce unit product costs, multi-year (2-3 years) sales contracts with price escalation will be pursued on the largest revenue producing isotopes.

II. Funding Schedule

Many uses for isotopes have emerged over the past generation as an adjunct of nuclear research, defense, and power development programs. As the range of available isotopes and the recognized uses for them have increased, isotope applications have become necessary to achieve progress in medical research and practice, new industrial processes, and scientific methodology.

<u>Sub-program</u>	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>\$ Change</u>	<u>% Change</u>
Isotope Production & Distribution Program (excluding Program Direction)	\$ 32,716	\$ 22,704	\$ 31,904	\$+9,200	+40
Less: Transfer from Isotope Support in Energy Supply R&D (excluding Program Direction)	-10,716	-6,704	-10,904	-4,200	-62
Mo-99 Initiative	<u>-12,000</u>	<u>-5,000</u>	<u>-9,000</u>	<u>-4,000</u>	<u>-80</u>
Revenues from Sales	<u>\$ 10,000</u>	<u>\$ 11,000</u>	<u>\$ 12,000</u>	<u>\$+1,000</u>	<u>+9</u>

III. Performance Summary - Major Accomplishments:

FY 1996      FY 1997      FY 1998

### Isotope Support

• Assure an adequate supply of isotopes to be used for medical diagnoses and therapy, other applications in the national interest, calutron operations to replenish inventories, and administrative activities.	\$10,716	\$6,704	\$10,904
-- Achieve and maintain 95 percent on-time deliveries.			
-- Achieve gross profit of 15 percent in FY 1996, attain gross profit of 20 percent by September 1997, and maintain a 20 percent gross profit while reducing operating costs in FY 1998.			
-- Reduce and maintain the number of complaints to less than four percent of all deliveries made.			
-- Maintain financial viability of the IP&D program.			
-- Transfer or privatize Mound activities.			
-- Continue calutron operations for the production of stable isotopes.			
-- Identify customer needs for new products that may better serve their needs.			
-- Response to customer requests for information within 48 hours.			
-- Revise the National Isotope Strategy by January 1997.			
-- Support research into new applications for use of radioisotopes and enriched stable isotopes.			
• Mo-99 Initiative			
-- Completed environmental impact statement and issued record of decision. Conducted production process verification and planning for facility design and modifications, waste disposal and equipment needs required to produce, process, and distribute Mo-99 and related medical isotopes.	\$12,000	\$0	\$0
-- Maintain nuclear facility operations, produce Mo-99 quality samples for industry evaluation and continue process verification and improvement to update Drug Master File for Food and Drug Administration (FDA) approval process, and reconfigure reactor core for increased target irradiation capability.	\$0	\$5,000	\$0
-- Maintain nuclear facility operations, complete Hot Cell Facility modifications to establish initial sustainable production capacity, and produce Mo-99 as required to seek FDA approval.	\$0	\$0	\$9,000
Total Isotope Support	<u>\$22,716</u>	<u>\$11,704</u>	<u>\$19,904</u>

Explanation of Funding Changes From FY 1997 To FY 1998

- Budget supports initiating sustainable and emergency production of FDA approved Mo-99

\$ + 9,200

DEPARTMENT OF ENERGY  
FY 1998 CONGRESSIONAL BUDGET REQUEST  
URANIUM SUPPLY AND ENRICHMENT ACTIVITIES

PROPOSED APPROPRIATION LANGUAGE

[For expenses of the Department of Energy in connection with operating expenses; the purchase, construction, and acquisition of plant and capital equipment and other expenses incidental thereto necessary for uranium supply and enrichment activities in carrying out the purposes of the Department of Energy Organization Act (42 U.S.C. 7101, et. seq.) and the Energy Policy Act (Public Law 102-486, section 901), including the acquisition or condemnation of any real property or any facility or for plant or facility acquisition, construction, or expansion; purchase of electricity as necessary; and the purchase of passenger motor vehicles (not to exceed 3 for replacement only); \$43,200,000, to remain available until expended: Provided, That revenues received by the Department for uranium programs and estimated to total \$42,200,000 in fiscal year 1997 shall be retained and used for the specific purpose of offsetting costs incurred by the Department for such activities notwithstanding the provisions of 31 U.S.C. 3302(b) and 42 U.S.C. 2296(b)(2): Provided further, That the sum herein appropriated shall be reduced as revenues are received during fiscal year 1997 appropriation from the General Fund estimated at not more than \$1,000,000.]

Explanation of Change

- (1) Deletes language in FY 1998 because Uranium Programs was transferred to the Energy Supply Research and Development Activities Appropriation.

DEPARTMENT OF ENERGY  
FY 1998 CONGRESSIONAL BUDGET REQUEST  
ENERGY SUPPLY RESEARCH AND DEVELOPMENT ACTIVITIES  
(Tabular dollars in thousands, Narrative in whole dollars)

URANIUM PROGRAMS

PROGRAM MISSION

This program supports important government activities related to the Federal uranium enrichment program that were not transferred to the United States Enrichment Corporation (USEC). In particular, this program addresses the facility and environmental legacies associated with the enrichment program, management of assets, and conduct of important national security activities.

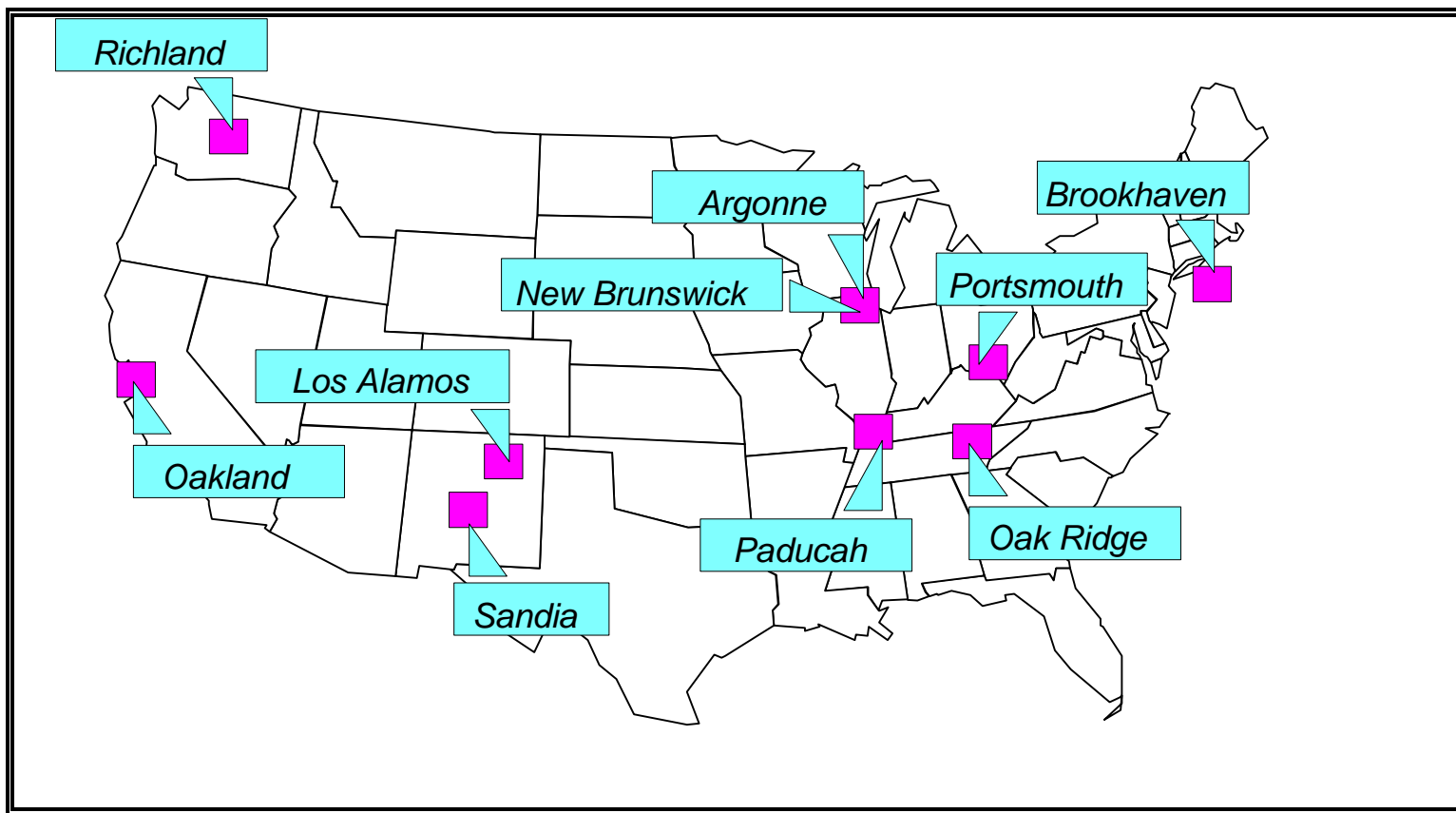
The programs target responsibility is to assure effective management of the Department's excess uranium and depleted uranium hexafluoride inventories. Our major mission for depleted uranium is to ensure the 47,000 depleted uranium hexafluoride cylinders are maintained in an environmentally safe manner by conducting annual cylinder inspections, exploring, developing and implementing options to effectively treat cylinders exhibiting accelerated corrosion. In addition, as part of the responsibility for the management of depleted uranium hexafluoride inventories, the Department will complete the long term management strategy and issue a Record of Decision by mid FY 1998. In addition, the Department is establishing a small development program with the objective of reducing the long term cost of converting depleted uranium hexafluoride to a stable, inert form and facilitating its disposition. Alternative uses for depleted uranium will also be explored. Activities at the gaseous diffusion plants in Portsmouth, Ohio, Paducah, Kentucky and Oak Ridge, Tennessee covered under the Department of Energy (DOE)/USEC Lease Agreement and uranium enrichment facilities not leased by USEC are also provided for under this program. These activities are maintenance of facilities and grounds, cleaning legacy PCB spills in the leased areas of the diffusion site consistent with the Federal Facilities Compliance Act, guarding and protecting HEU material stored at the Portsmouth site, reducing the financial liabilities created by the establishment of the USEC by paying post retirement life and medical costs for retired contractor personnel at the diffusion sites and power suppliers. Lastly, the Department assists the NRC in preparing annual congressional reports on the status of the diffusion plants and validates USEC cost of nuclear safety upgrades that were required as a condition of NRC certification.

Uranium Programs activities are also focused on cooperation and coordination with other Departmental Offices and Government Agencies in the implementation of U.S. Non-Proliferation Policy by increasing confidence that Russian low enriched uranium (LEU) sold to the USEC is derived from highly enriched uranium (HEU) removed from dismantled Russian nuclear weapons.

This program also provides the means by which the Department plans to sell its excess natural and low enriched uranium over the next several years. The USEC Privatization Act and the Energy Policy Act of 1992 allow the Department of Energy to sell excess uranium stockpiles subject to conditions in those Acts. Included in the material planned for sale by the Department over the next five years is Russian natural uranium transferred to the Department from the USEC per the USEC Privatization Act. All of the uranium to be sold under this program is currently held at the Portsmouth Gaseous Diffusion Plant or Paducah Gaseous Diffusion Plant. The Department has issued an Environmental Assessment (EA) and Finding of No Significant Impact of the Department's proposed sale of surplus natural and low enriched uranium. Beginning in FY 1998, collections from the sale of this material will no longer be used to offset the Department's budget request either fully or partially but will be deposited directly into the General Fund at Treasury.

Before the Department can sell any of its excess natural or low enriched uranium, the USEC Privatization Act requires the Secretary to determine that "...the sale of the material will not have an adverse material impact on the domestic mining, conversion, or enrichment industry, taking into account the sales of uranium under the Russian HEU Agreement and the Russian Suspension Agreement...". In total, the Department currently has available for future sale the equivalent of 21.5 million pounds of natural uranium in the forms of natural and low enriched uranium hexafluoride from its stockpile of uranium assets.

FY 1996 and FY 1997 funding for Uranium Programs was provided under the Uranium Supply and Enrichment Activities Appropriation.



*Uranium Programs Sites*



The GOALS of the Uranium Programs (UP) are to:

1. Manage Office of Nuclear Energy, Science and Technology (NE) facilities at Portsmouth , Ohio, Paducah, Kentucky, and Oak Ridge, Tennessee including PCB spills that originate within facilities leased to USEC in a safe, economic, and environmentally-sound manner.
2. Cooperate and coordinate with other Departmental offices and government agencies in the implementation of U.S. nonproliferation policy, especially the full implementation of Highly Enriched Uranium transparency program agreements/programs with Russia.
3. Prudently manage the Department's inventory of excess natural and low enriched uranium, including Russian uranium transferred to the Department from USEC as required by USEC privatization Act.
4. Ensure the sale of these inventories is accomplished in a manner which will maximize the return to the U.S. government while ensuring they do not have an adverse material impact on domestic uranium industries.
5. Ensure that the 47,000 depleted uranium hexafluoride cylinders are maintained in an environmentally safe manner by conducting annual inspections and exploring options to effectively treat cylinders that exhibit accelerated corrosion.

The OBJECTIVES related to these goals are:

1. Manage and dispose of NE's uranium and depleted uranium hexafluoride ( $\text{DUF}_6$ ) inventories in a safe, economic, and environmentally-sound manner.
2. Monitor the Russian processes involved in producing low enriched uranium (LEU) purchased from Russia to assure that the material is derived from highly enriched uranium (HEU) from dismantled Russian nuclear weapons.
3. Manage the pre-existing liabilities incurred before the creation of the United States Enrichment Corporation in 1993 and manage the additional liabilities as a result of the 1996 legislation supporting the privatization of USEC.
4. Manage the collection of PCB spills at the leased gaseous diffusion plants and maintain the nonleased facilities in a safe and environmentally-sound condition.
5. Help meet the Department's commitments to USEC.
6. Manage the Department's excess uranium inventories in a safe, economical and environmentally sound manner and generate revenues from the sale of the Departments excess uranium inventories in order to help balance the Federal budget..

PERFORMANCE MEASURES:

1. Reduce the HEU stockpile at the Portsmouth site by approximately 3 metric tons of uranium (MTU) in FY 1998 by blending it with LEU to produce reactor grade fuel.
2. Reduce the Departmental pre-existing liabilities (estimated to cost over \$169,200,000) by \$7,793,000 in FY 1998 by reimbursing the management and operating contractor for post-retirement life and medical costs for retirees who supported the Uranium Enrichment Program before July 1, 1993.
3. Conduct special monitoring inspections in Russia to increase confidence that the LEU being purchased by the United States Enrichment Corporation has been derived from HEU removed from dismantled Russian nuclear weapons and maintain a permanent presence office at Novouralsk, Russia.
4. Complete the installation of  $\text{UF}_6$  flow and enrichment measurement non-destructive assay (NDA) systems at the blend points at the Siberian Chemical Enterprise (SChE) facilities in Seversk. Collect and analyze resultant data.

#### PERFORMANCE MEASURES: - continued

5. Complete 100 percent of the inspections on depleted UF<sub>6</sub> cylinders that are heavily oxidized and 25 percent of the remaining cylinder inventory.
6. Clean and paint 800 depleted uranium cylinders, complete construction of "T" cylinder storage yard at Paducah and relocate 8,700 cylinders to permit 100 percent inspection.
7. Report to Congress on the effect the Russian HEU Purchase Agreement is having on the domestic uranium mining, conversion, and enrichment industries, and the operation of the gaseous diffusion plants.
8. In FY 1998, maximize revenue raised through the sale of excess Departmental uranium to be deposited in the Treasury's General Fund to the extent that such sales will not have an adverse material impact on domestic uranium industries.

#### SIGNIFICANT ACCOMPLISHMENTS AND PROGRAM SHIFTS:

- Supply USEC with the remaining HEU oxides at the Portsmouth site for downblending into LEU as authorized by the USEC Privatization Act of 1996 (P.L. 104-134, Subchapter A).
- In FY 1995 and FY 1996, the Department supported USEC in transitioning from Department of Energy (DOE) regulatory requirements to the Nuclear Regulatory Commission (NRC) requirements for certification. This support included preparation of a compliance plan for achieving NRC standards to be submitted with the application for certification as well as technical support in revising the operating safety requirements now in effect at the facilities to technical safety requirements that meet NRC operating conditions. It is expected that NRC will assume full regulatory authority for the leased diffusion plants in mid FY 1997.
- The Department will implement detailed protocol agreements detailing procedures governing all aspects of monitoring visits and verification activities pursuant to the Russian downblending of HEU for shipment of LEU to the U.S. and provide assistance as appropriate to Russian monitors in the U.S. and U.S. facilities subject to Russian monitoring activities.
- This NE program supported the Secretary's response to the Chairman of the Defense Nuclear Facilities Safety Board (DNFSB) on June 29, 1995, that answers the DNFSB May 5, 1995, Recommendation 95-1 concerning improved safety of cylinders containing DUF<sub>6</sub>. An implementation plan was developed in consultation with the DNFSB and delivered on October 16, 1995. NE completed delivery in FY 1996 of the 5 major documents required as part of the implementation plan. The last deliverable will be the DOE approved Safety Analysis Reports in mid FY 1997.
- Conduct a small development and demonstration program that has the objectives of: (1) reducing the eventual disposal cost of depleted uranium; and (2) stimulating the use of depleted uranium and thereby reduce the level of material that must be disposed of in the future. Development activities will help define and select options that are identified in the preferred alternative in the draft programmatic environmental impact statement currently scheduled for release by the Department in the spring of FY 1997.
- Beginning in FY 1998, collections from the sale of excess uranium materials will no longer be used to offset the Department's budget request either fully or partially but will be deposited directly into the General Fund at Treasury and Uranium Programs funding requirements are being requested under the Energy Supply Research and Development Activities Appropriation.
- A draft Environmental Assessment (EA) on the Department's proposal to sell excess natural and low enriched UF<sub>6</sub> was issued for public comment in August 1996. Fourteen comment letters were received from public, state, federal and industry representatives. These comments were considered in developing the final EA, and the EA and a Finding of No Significant Impact were issued in October 1996.

SIGNIFICANT ACCOMPLISHMENTS AND PROGRAM SHIFTS: -continued

- In December 1996, the Department signed a contract with a representative of the Russian Executive Agent for the Russian HEU Purchase Agreement whereby Russia will buy the equivalent of 7.8 million pounds of transferred Russian uranium and use the material in matched sales from 1996 through 1998. These sales will generate the requirement for 7.8 million pounds of newly produced domestic uranium in order to meet the requirements of matched sales under the Antidumping Suspension Agreement.
- Analyses supporting the Secretary's determination with regard to the sale of excess Departmental uranium in FY 1997 was completed and language has been drafted which would allow the sale of up to 3.2 million pounds of natural uranium equivalent to be sold in FY 1997 in order to support the Department's revenue target. Sales will begin to be executed upon the Secretary's determination that such sales can be made without having an adverse material impact on domestic uranium industries.

# URANIUM PROGRAMS

## PROGRAM FUNDING PROFILE (Dollars in Thousands)

<u>Sub-program</u>	<u>FY 1996 Current Appropriation</u>	<u>FY 1997 Original Appropriation</u>	<u>FY 1997 Adjustments</u>	<u>FY 1997 Current Appropriation</u>	<u>FY 1998 Budget Request</u>
Uranium Programs					
Operating Expenses	\$ 83,314 <sup>1</sup>	\$ 56,466	\$0	\$56,466	\$ 79,135
Construction	<u>7,000</u>	<u>4,000</u>	<u>0</u>	<u>4,000</u>	<u>0</u> <sup>2</sup>
<b>SUBTOTAL, Uranium Programs</b>	<b>90,314</b>	<b>60,466</b>	<b>0</b>	<b>60,466</b>	<b>79,135</b>
Use of Prior Year Balances					
Operating Expenses	-25,000	-14,316 <sup>3</sup>	0	-14,316 <sup>3</sup>	0
Construction	<u>-1,303</u>	<u>-2,950</u>	<u>0</u>	<u>-2,950</u>	<u>-3,535</u>
<b>SUBTOTAL, Use of Prior Year Balances</b>	<b>-26,303<sup>3</sup></b>	<b>-17,266</b>	<b>0</b>	<b>-17,266</b>	<b>-3,535</b>
<b>SUBTOTAL, Uranium Programs</b>	<b><u>\$ 64,011<sup>4</sup></u></b>	<b><u>\$ 43,200<sup>4</sup></u></b>	<b><u>\$ 0<sup>4</sup></u></b>	<b><u>\$ 43,200<sup>4</sup></u></b>	<b><u>\$ 75,600</u></b>
<b>Offsetting Collections</b>	<b>\$0</b>	<b>\$42,200<sup>5</sup></b>	<b>\$0</b>	<b>\$42,200<sup>5</sup></b>	<b>\$0<sup>6</sup></b>
<b>Energy Asset Acquisition</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$22,300</b>

<sup>1</sup> Reflects \$143,000 adjustment for government-wide object class reduction and \$43,000 transfer to Small Business Innovative Research and Small Business Technology Transfer Research.

<sup>2</sup> Funded under Energy Assets Acquisition appropriation in FY 1998.

<sup>3</sup> The following amounts are from the proposed FY 1993 reprogramming to manage responsibilities left with the Department: FY 1996 - \$25,600,000; FY 1997 - \$14,316,000.

<sup>4</sup> Funded under Uranium Supply and Enrichment Activities appropriation in FY 1996 and FY 1997.

<sup>5</sup> Sales are subject to the Secretarial determination on the amount of excess uranium that can be sold without causing adverse material impact on domestic uranium industries.

<sup>6</sup> Receipts from sales of uranium will be deposited in the General Fund of the Treasury.

### Public Law Authorizations

Public Law 95-95, DOE Organization Act

Public Law 102-486, Section 901, Energy Policy Act

Public Law 104-134, Omnibus Consolidated Rescissions and Appropriations Act of 1996

URANIUM PROGRAMS

PROGRAM FUNDING BY SITE  
(Dollars in Thousands)

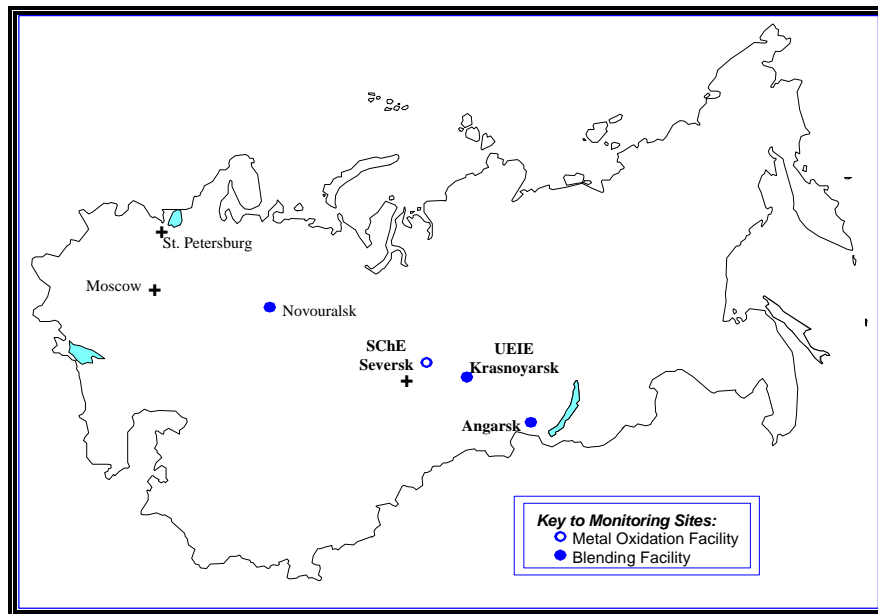
<u>Laboratory/Plant/Installation</u>	<u>FY 1996 Current Appropriation</u>	<u>FY 1997 Original Appropriation</u>	<u>FY 1997 Adjustments</u>	<u>FY 1997 Current Appropriation</u>	<u>FY 1998 Budget Request</u>
Albuquerque Operations Office	\$0	\$350	\$0	\$350	\$200
Argonne National Lab (East)	3,200	1,320	0	1,320	0
Brookhaven National Lab	100	0	0	0	112
Chicago Operations Office	50	0	0	0	0
K-25 Site	20,458	11,877	0	11,877	14,189
Lawrence Livermore National Lab	6,735	5,690	0	5,690	8,034
Los Alamos National Laboratory	50	2,450	0	2,450	1,463
New Brunswick Lab	142	475	0	475	690
Nevada Operations Office	250	0	0	0	0
Oak Ridge Institute for Science and Education	646	0	0	0	0
Oak Ridge National Laboratory	1,408	0	0	0	0
Oak Ridge Operations Office	7,979	8,401	0	8,401	11,906
Oakland Operations Office	2,608	110	0	110	1,452
Pacific Northwest Lab	86	0	0	0	0
Paducah Gaseous Diffusion Plant	20,257	12,080	0	12,080	9,199
Pittsburgh Energy Technology Center	0	2,200	0	2,200	0
Portsmouth Gaseous Diffusion Plant	23,435	12,885	0	12,885	27,040
Richland Operations Office	505	395	0	395	261
Sandia National Laboratories	50	930	0	930	1,519
Washington Headquarters	<u>2,355</u>	<u>1,303</u>	<u>0</u>	<u>1,303</u>	<u>3,070</u>
<b>SUBTOTAL</b>	<b><u>\$90,314<sup>1</sup></u></b>	<b><u>\$60,466<sup>1</sup></u></b>	<b><u>\$0<sup>1</sup></u></b>	<b><u>\$60,466<sup>1</sup></u></b>	<b><u>\$79,135</u></b>
 <b>Energy Asset Acquisition</b>					
K-25 Site	\$0	\$0	\$0	\$0	\$5,600
Paducah Gaseous Diffusion Plant	\$0	\$0	\$0	\$0	\$16,700

## URANIUM PROGRAMS (Dollars in Thousands)

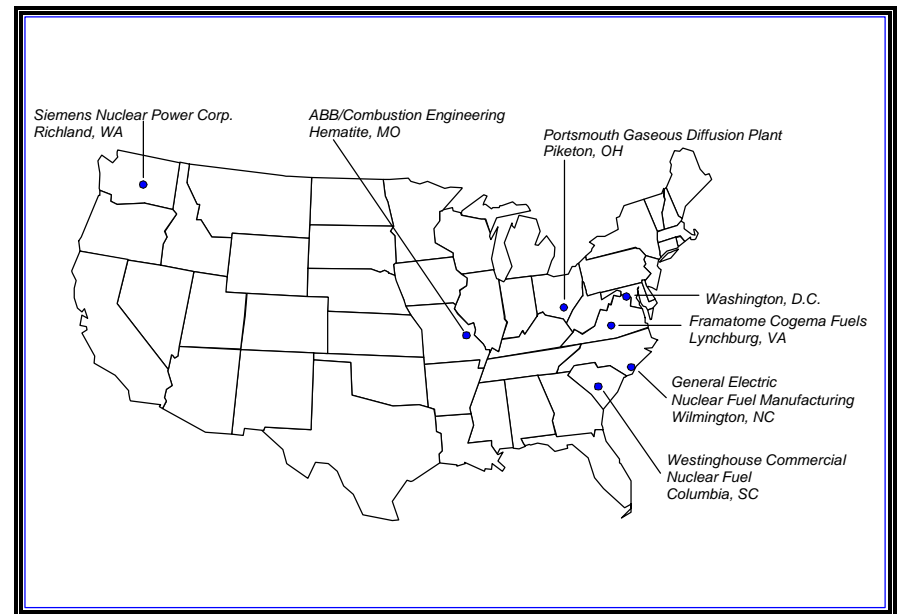
### I. Mission Supporting Goals and Objectives:

Uranium Programs activities are primarily focused on accomplishing two major goals:

The first goal is to cooperate and coordinate with other Departmental Offices and Governmental Agencies in the Implementation of U.S. Non-Proliferation Policy. The U.S. is seeking reductions in worldwide inventories of fissile weapons materials and as part of this initiative, the United States Enrichment Corporation (USEC) is purchasing quantities of Russian low enriched uranium (LEU) derived from highly enriched uranium (HEU) that were removed from dismantled Russian weapons. In March 1994, U.S. and Russian representatives signed the Protocol on HEU Transparency Arrangements, which governs U.S. access to Russian processing facilities. At the same time, the representatives signed the Transparency Further Arrangements Protocol, which establishes how monitoring activities will be conducted at facilities in Russia and the U.S. In accordance with these arrangements, the Department is working to increase confidence that Russian LEU sold to USEC actually is derived from excess weapons HEU.



*Russian Sites Associated with HEU Transparency*



*U. S. Sites Associated with HEU Transparency*

I. Mission Supporting Goals and Objectives: - continued

The second goal is to manage Nuclear Energy facilities in a safe, economic, and environmentally-sound manner. Nuclear Energy is responsible for managing uranium enrichment facilities not leased by USEC and the Department's excess uranium and depleted uranium hexafluoride inventories. Until implementation of the Energy Policy Act of 1992, Nuclear Energy was responsible for overseeing the daily operations at the gaseous diffusion plants (GDPs) at Portsmouth, Ohio, and Paducah, Kentucky. Under the terms of the July 1, 1993 DOE/USEC Lease Agreement, management responsibility for the day-to-day operations of these GDPs was shifted to USEC, which leases these facilities from the Department. In addition to the activities at the GDPs covered under the DOE/USEC Lease Agreement, Nuclear Energy manages numerous other remaining projects at its non-leased facilities in a safe, cost-effective and environmentally-sound manner. As part of Nuclear Energy's goal for the management of depleted uranium hexafluoride inventories, the Department will complete the long term management strategy and issue the Record of Decision by mid FY 1998.

The Uranium Sales Program is focused on meeting four goals:

1. Managing the Department's inventory of excess natural and low enriched uranium, including the transferred Russian uranium.
2. Ensuring the sale of these inventories is accomplished in a manner which will maximize the return to the U.S. government while ensuring such sales meet the intent of the USEC Privatization Act and do not have an adverse material impact on domestic uranium industries.
3. Cooperating and coordinating with the Departments of Commerce and Treasury, and other Departmental offices to support trade policies and Administration deficit reduction goals.
4. Meeting the Department's uranium-related requirements with regard to the sale and management of excess uranium inventories as set forth in the USEC Privatization Act and Energy Policy Act of 1992.

II. Funding Schedule:

<u>Program Activity</u>	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>\$ Change</u>	<u>% Change</u>
Highly Enriched Uranium Equipment Shutdown and Inventory Disposition	\$7,730	\$5,000	\$15,747	+\$10,747	+215
Nuclear Safety Compliance Corrective Actions	10,956	1,860	2,130	+270	+15
Maintenance of Leased and Non-Leased Facilities	9,219	8,700	9,553	+853	+10
Technology Partnerships	1,957	0	0	0	
Pre-existing Liabilities	12,713	7,500	7,973	+473	+6
Transparency Measures	6,862	9,600	15,652	+6,052	+63
Depleted Uranium Hexafluoride Cylinders and Maintenance	25,494	13,706	16,755	+3,049	+22
Depleted Uranium Hexafluoride Development and Demonstration	0	2,500	2,100	-400	-16
Corrective Actions	845	600	650	+50	+8
Program Management Services	3,034	3,000	3,009	+9	0
Construction	<u>7,000</u>	<u>4,000</u>	<u>0</u>	<u>-4,000</u>	<u>-100</u>
<b>SUBTOTAL, Uranium Programs (excluding Program Direction)</b>	<b><u>\$85,810<sup>1</sup></u></b>	<b><u>\$56,466<sup>1</sup></u></b>	<b><u>\$73,569</u></b>	<b><u>+\$17,103</u></b>	<b><u>+30</u></b>
<b>Energy Asset Acquisition</b>	<b>\$0</b>	<b>\$0</b>	<b>\$22,300</b>	<b>+\$22,300</b>	<b>+100</b>

---

<sup>1</sup>Funded under Uranium Supply and Enrichment Activities appropriation in FY 1996 and FY 1997.



### III. Performance Summary - Major Accomplishments:

**FY 1996**      **FY 1997**      **FY 1998**

#### Depleted Uranium Hexafluoride Management

• Annually inspect 22,900 depleted uranium cylinders, repair defective cylinder valves as required, maintain procedures for conduct of operation, and maintain data base, including updating of inspection data. Conduct quadrennial inspections of 5,800 cylinders. Develop remote sensing inspection technologies to detect cylinder leaks and determine cylinder wall condition.	\$14,943	\$5,794	\$10,555
• Restack depleted uranium storage cylinders to permit 100 percent visual inspection and ultrasonic inspection. Cylinders are restacked at the following approximate rates: FY 1996 - 8,000; FY 1997 - 11,000; and FY 1998 - 11,000.	1,815	4,426	4,400
• Delivered all five FY 1996 Defense Nuclear Facility Safety Board Recommendation 95-1 commitments on schedule. Deliver final Board commitment on schedule in FY 1997. Initiated a pilot cylinder painting program at the Paducah site during FY 1996 and painted approximately 1,200 cylinders. Continue cylinder painting program at Paducah and paint approximately 1,300 cylinders in FY 1997 and 800 cylinders in FY 1998.	2,409	1,800	1,100
• Initiated the preparation of a programmatic environmental impact statement (PEIS) in January 1996 by issuing a notice of intent. Complete the draft engineering and cost analysis to support the development of a preferred alternative and the record of decision (ROD). Issue the draft PEIS in April 1997 followed by the final PEIS in early FY 1998 and the ROD in mid FY 1998.	6,327	1,686	700
• Conduct development and demonstration activities on those technologies which can significantly lower the disposition cost of depleted uranium. Explore and develop alternative uses of depleted uranium to reduce the amount for disposition.	0	2,500	2,100
Total Depleted Uranium Hexafluoride Management	\$25,494	\$16,206	\$18,855

#### Uranium Sales

• Manage and administer the sale of the Department's inventory of natural and low enriched uranium, complete required reports to Congress, prepare and issue an environmental assessment for the sale of excess uranium material, and prepare analyses to support Secretarial Determinations to allow the Department to sell excess uranium inventories.	\$450	\$350	\$350
--	-------	-------	-------

**III. Performance Summary - Major Accomplishments: - continued****FY 1996****FY 1997****FY 1998****Other**

- |   |          |         |         |
|---|----------|---------|---------|
| • Consistent with the requirements of the 1992 Energy Policy Act, continue to pay Ohio Valley Electric Corporation and Lockheed Martin Energy Systems retirees post-retirement life and medical benefits and legal representation on behalf of DOE for lawsuits against DOE. Payment of \$3,600,000 into an established sinking fund account for future post retirement life and medical benefits for Ohio Valley Electric Corporation is being deferred in FY 1997 and FY 1998.  | \$12,713 | \$7,500 | \$7,973 |
| • Continue the disposition of HEU material by shipping HEU to the Y-12 plant and transferring material to USEC consistent with the 1996 legislation supporting USEC privatization. While the material remains at the Portsmouth site DOE must pay for the cost of safeguarding the HEU.   | 7,730    | 5,000   | 15,747  |
| • Completed the preparation of the site wide Safety Analysis Reports (SAR) for the Paducah and Portsmouth sites in FY 1996. During FY 1997, complete the Safety Evaluation Report which is the approval document for the SARs. During FY 1998, continue the billing verification of the USEC cost for implementing the DOE compliance plan required for NRC certification of the leased diffusion plants, update SARs as necessary, and assist with preparation of NRC's annual report to Congress.   | 10,956   | 1,860   | 2,130   |
| • Continue to perform routine maintenance activities at the non-leased facilities. Activities include safety and health inspections, and corrective maintenance. Maintain PCB troughing systems in the process buildings leased to USEC, which involves routine inspections, repairs, spill cleanup and laboratory analysis. Store and manage uranium-bearing materials until eventual off-site disposition. Maintain grounds and roads including grass mowing, erosion and weed control, fence and gravel road repairs, and conduct biological monitoring. | 10,064   | 9,300   | 10,203  |
| • Transfer membrane technology and gas centrifuge related technology to the private sector through the execution of Cooperative Research and Development Agreements (CRADAs).   | 1,957    | 0       | 0       |
| • Conducted four monitoring inspections in FY 1996 and plan to conduct 12 in FY 1997 and up to 20 in FY 1998. Established a permanent presence office in Russia in late FY 1996 and plan to maintain that office in FY 1997 and FY 1998. Also supported Transparency Review Committee meetings including allowable reception and representation expenses. Will complete the fabrication and installation of NDA equipment at UEIE and ECP in FY 1997.   | 6,862    | 9,600   | 15,652  |

### III. Performance Summary - Major Accomplishments: - continued

	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>
<u>Other-continued</u>			
• Continue support for coordinating the review or preparation of the technical documents and reports associated with cylinder management including meeting DNFSB commitments, supporting SAR reviews, environmental reviews, Paducah and Portsmouth site support services, and other uranium programs activities at Headquarters and the field.	\$2,584	\$2,650	\$2,659
• Continue construction of new depleted uranium hexafluoride cylinder storage yards and renovation of existing storage yards which began in FY 1996. During FY 1998, complete design work for construction of a new DUF <sub>6</sub> cylinder storage yard at either Oak Ridge, Tennessee, or Paducah, Kentucky. FY 1998 funding requirements are \$6,400,000 and outyear requirements are \$15,900,000.	7,000	4,000	22,300
Total Other	\$59,866	\$39,910	\$76,664
Total Uranium Programs	\$85,810	\$56,466	\$95,869

#### EXPLANATION OF FUNDING CHANGES FY 1997 to FY 1998:

Highly Enriched Uranium Equipment Shutdown and Inventory Disposition	+10,747
• Increased funding is required for safeguards and security costs. During FY 1996 and FY 1997 safeguards and security costs were funded from uncosted obligations.	
Nuclear Safety Compliance Corrective Actions	+270
• Increased funding is required to support the NRC report to Congress for the leased gaseous diffusion plants.	
Maintenance of Leased and Non-Leased Facilities	+853
• The increase is due to the use of uncosted obligations during FY 1997.	
Pre-existing Liabilities	+473
• Increased funding is required to support a class action lawsuit that is expected to go to trial in FY 1997/FY 1998.	
Transparency Measures	+6,052
• The annual cost for the transparency program for FY 1997 and FY 1998 is approximately the same (\$16.5 million in FY 1997 and \$15.7 million in FY 1998). During FY 1997 uncosted obligations will be used to fund a significant portion of transparency activities and these funds will be spent by the end of FY 1997.	
Depleted Uranium Hexafluoride Activities	+2,649
• Significant acceleration is planned in cylinder maintenance activities. This acceleration is a result of a potential notice of violation settlement with the State of Ohio and to satisfy the Secretarial response to DNFSB Recommendations. The increase in FY 1998 is also due to the use of uncosted obligations in FY 1997 to fund depleted uranium hexafluoride activities.	

EXPLANATION OF FUNDING CHANGES FY 1997 to FY 1998 - continued:

Corrective Actions	+50
• Increased funding is required to satisfy State of Kentucky permit conditions.	
Program Management Services	+9
• The increase is due to inflation.	
Construction	<u>+18,300</u>
• Reflects full up-front funding for construction projects in accordance with the Administration's new policy.	
<b>Total Funding Changes, Uranium Programs</b>	<b>\$39,403</b>

OFFICE OF NUCLEAR ENERGY, SCIENCE AND TECHNOLOGY  
CAPITAL OPERATING EXPENSES AND CONSTRUCTION SUMMARY

URANIUM PROGRAMS  
(\$ in Thousands)

Capital Operating Expenses

	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>\$ Change</u>	<u>% Change</u>
GPP	\$673	\$0	\$0	\$0	0
AIP	0	0	0	0	0
Capital Equipment	1,312	0	0	0	0
1 CDRs	30	0	0	0	0
2 "Bridge" Costs	340	70	1,023	+953	+136

Construction Funded Project Summary

<u>Project Number</u>	<u>Project Title</u>	<u>TEC</u>	<u>Previous Approp.</u>	<u>FY 1996 Approp.</u>	<u>FY 1997 Approp.</u>	<u>FY 1998 Request</u>	<u>Unapprop. Balance</u>
98-U-200	DUF <sub>6</sub> cylinder storage yards, K-25 site, Oak Ridge, Tennessee	\$5,600	\$0	\$0	\$0	\$5,600	\$0
96-U-201	DUF <sub>6</sub> cylinder storage yards, Paducah, Kentucky Gaseous Diffusion Plant	23,700	0	3,000	4,000	16,700	0
93-U-200	UF cylinders and storage yards, Paducah, Kentucky, and Portsmouth, Ohio, Gaseous Diffusion Plants	9,500	6,100	3,400	0	0	0
84-N-405	Utilities upgrading, Gaseous Diffusion Plants	<u>27,427</u>	<u>26,827</u>	<u>600</u>	<u>0</u>	<u>0</u>	<u>0</u>
<b>TOTAL Uranium Programs</b>		<b><u>\$66,227</u></b>	<b><u>\$32,927<sup>1</sup></u></b>	<b><u>\$7,000<sup>1</sup></u></b>	<b><u>\$4,000<sup>1</sup></u></b>	<b><u>\$22,300<sup>2</sup></u></b>	<b><u>\$0</u></b>

---

<sup>1</sup> Funded under Uranium Supply and Enrichment Activities appropriation.

<sup>2</sup> Funded under Energy Asset Acquisition appropriation.

URANIUM PROGRAMS PROGRAM DIRECTION  
(Dollars in Thousands)

I. Mission Supporting Goals/Ongoing Responsibilities

The Uranium Programs Program Direction account supports some Office of Nuclear Energy, Science and Technology personnel at Headquarters and some Operations Office personnel in the field. This account also includes funding for administrative expenses, such as: training, computer hardware and software acquisitions, modifications, and other telecommunications services for work stations. In FY 1997, the Department's central administrative office established a Working Capital Fund (WCF) to provide funding for mandatory administrative costs, such as rent and utilities. Funding is provided for the WCF in FY 1998.

NE Headquarters has aggressively streamlined operations. On-board staff have been reduced from 258 in August 1993 to a current level of 135 (a 48 percent reduction). The Office is also meeting other streamlining goals. For example, senior executive and GS 15/14 positions have been reduced by 49 percent; the employee to supervisor ratio has been increased from 3:1 to 13:1; overall NE Headquarters travel has been reduced by about 30 percent from FY 1995 and NE Headquarters support services contracting has been reduced by about 40 percent from FY 1995.

II. Funding Table

	FY 1996 Current <u>Appropriation</u>	FY 1997 Original <u>Appropriation</u>	FY 1997 <u>Adjustments</u>	FY 1997 Current <u>Appropriation</u>	FY 1998 Budget <u>Request</u>
<u>Summary - Budget</u>					
Headquarters	\$1,570	\$2,111	\$0	\$2,111	\$2,296
Field	<u>2,946</u>	<u>2,844</u>	<u>0</u>	<u>2,844</u>	<u>3,270</u>
<b>TOTAL, BUDGET</b>	<b><u>\$4,516</u></b>	<b><u>\$4,955</u></b>	<b><u>\$0</u></b>	<b><u>\$4,955</u></b>	<b><u>\$5,566</u></b>
Adjustment-Unobligated/Uncosted					
Carryover	-12	-955	0	-955	0
<b>NEW BUDGET AUTHORITY</b>	<b><u>4,504<sup>1</sup></u></b>	<b><u>4,000<sup>1</sup></u></b>	<b><u>0<sup>1</sup></u></b>	<b><u>4,000<sup>1</sup></u></b>	<b><u>5,566</u></b>
<u>Summary - Strategic Alignment Staffing</u>					
<u>Targets</u>					
Headquarters End of Year Staffing					
Program Direction	114	103		103	87
Isotope Production & Dist.	9	9		9	11
<b>Uranium Programs</b>	<b><u>16</u></b>	<b><u>16</u></b>		<b><u>16</u></b>	<b><u>17</u></b>
<b>TOTAL, HEADQUARTERS</b>	<b>139</b>	<b>128</b>		<b>128</b>	<b>115</b>

---

<sup>1</sup>Funded under Uranium Supply and Enrichment Activities appropriation in FY 1996 and FY 1997.

	FY 1996 Current <u>Appropriation</u>	FY 1997 Original <u>Appropriation</u>	FY 1997 <u>Adjustments</u>	FY 1997 Current <u>Appropriation</u>	FY 1998 Budget <u>Request</u>
<u>Summary - Strategic Alignment Staffing</u>					
<u>Targets - continued</u>					
Field End of Year Staffing					
Program Direction	31	29		29	30
Isotope Production & Dist.	1	1		1	1
<b>Uranium Programs</b>	<b><u>35</u></b>	<b><u>29</u></b>		<b><u>29</u></b>	<b><u>27</u></b>
TOTAL, FIELD	67	59		59	58
<u>Detailed Breakout</u>					
<u>Chicago</u>					
Salary and Benefits	\$127	\$0	\$0	\$0	\$0
Travel	0	0	0	0	0
Support Services	0	0	0	0	0
Other Related Expenses	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	\$127	\$0	\$0	\$0	\$0
End of Year Staffing	0	0		0	0
<u>Idaho</u>					
Salary and Benefits	\$0	\$0	\$0	\$0	\$0
Travel	0	0	0	0	0
Support Services	0	0	0	0	0
Other Related Expenses	<u>10</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	\$10	\$0	\$0	\$0	\$0
End of Year Staffing	0	0		0	0
<u>Oakland</u>					
Salary and Benefits	\$82	\$90	\$0	\$90	\$94
Travel	16	15	0	15	15
Support Services	0	0	0	0	0
Other Related Expenses	<u>10</u>	<u>5</u>	<u>0</u>	<u>5</u>	<u>5</u>
Total	\$108	\$110	\$0	\$110	\$114
End of Year Staffing	2	2		2	2

II. Funding Table - continued

	FY 1996 Current <u>Appropriation</u>	FY 1997 Original <u>Appropriation</u>	FY 1997 <u>Adjustments</u>	FY 1997 Current <u>Appropriation</u>	FY 1998 Budget <u>Request</u>
<u>Detailed Breakout - continued</u>					
<u>Oak Ridge</u>					
Salary and Benefits	\$1,619	\$1,954	\$0	\$1,954	\$2,025
Travel	48	110	0	110	563
Support Services	0	0	0	0	0
Other Related Expenses	<u>1,034</u>	<u>670</u>	<u>0</u>	<u>670</u>	<u>568</u>
Total	\$2,701	\$2,734	\$0	\$2,734	\$3,156
End of Year Staffing	33	27		27	25
<u>Headquarters</u>					
Salary and Benefits	\$1,362	\$1,600	\$0	\$1,600	\$1,652
Travel	87	171	0	171	300
Support Services	0	0	0	0	0
Other Related Expenses	<u>121</u>	<u>340</u>	<u>0</u>	<u>340</u>	<u>344</u>
Total	\$1,570	\$2,111	\$0	\$2,111	\$2,296
End of Year Staffing	16	16		16	17
Adjustment - Unobligated/ Uncosted Carryover	-12	-955	0	-955	0
Budget Authority	\$4,504 <sup>1</sup>	\$4,000 <sup>1</sup>	\$0 <sup>1</sup>	\$4,000 <sup>1</sup>	\$5,566

---

<sup>1</sup>Funded under Uranium Supply and Enrichment Activities appropriation in FY 1996 and FY 1997.



### III. Performance Summary

#### FY 1996 Measurable Performance Activities:

The key benchmarks by which NE measured its FY 1996 streamlining performance are:

- Reduced Headquarters staff to 144 (a 44 percent reduction since FY 1993), compared to a 28 percent reduction in program budgets
- Reduced senior executive positions to six (a 73 percent reduction since FY 1993) and reduced senior grade level (SES/15/14) positions by 44 percent since FY 1993.
- Exceeded National Performance Review (NPR) streamlining goals to reduce administrative positions by 50 percent
- Increased the employee to supervisor ratio to 13:1
- Reduced Headquarters travel by about 30 percent from FY 1995 level
- Reduced reliance on support service contracts by about 40 percent from FY 1995 level

#### FY 1997 Measurable Performance Activities:

The key benchmarks by which NE will measure its FY 1997 streamlining performance are:

- Reducing senior executive positions to six (a 73 percent reduction since FY 1993), and reduced senior grade level (SES/15/14) positions by 52 percent since FY 1993.
- Continuing to exceed National Performance Review (NPR) streamlining goals to reduce administrative positions by 50 percent.
- Exceeding DOE employee to supervisor ratio target of 11:1
- Continue to reduce reliance on support service contractors by about 40 percent and to reduce Headquarters travel by about 30 percent from FY 1995 levels.

#### FY 1998 Measurable Performance Activities:

The key benchmarks by which NE will measure its FY 1998 streamlining performance are:

- Reducing senior executive positions to six (a 73 percent reduction since FY 1993), and maintain overall reductions in senior grade level (SES/15/14) positions.
- Continue to exceed National Performance Review (NPR) streamlining goals to reduce administrative positions by 50 percent.
- Exceeding the DOE employee to supervisor ratio target of 11:1
- Initiate funding for the Working Capital Fund for Uranium Programs

#### IV. Explanation of Funding Changes FY 1997 to FY 1998:

The increase of \$611,000 from the FY 1997 level is primarily due to increased travel requirements related to transparency measures and the initiation of the Working Capital Fund in Uranium Programs.

# URANIUM PROGRAMS

## Program Direction

### Headquarters - Other Related Expenses (\$ in thousands)

<u>OTHER RELATED EXPENSES</u>	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>CHANGE</u>
Working Capital Fund	\$ 0	\$ 0	\$ 0	\$ 0
ADP/TeleVideo Hardware and Software Procurement/Maintenance	86	75	0	-75
Subscriptions/Publications	6	10	0	-10
Training	15	15	0	-15
Other Miscellaneous Expenses	0	200	0	-200
Office Logistical Support	14	40	0	-40
TOTAL OTHER RELATED EXPENSES	<u>\$ 121</u>	<u>\$ 340</u>	<u>\$ 0</u>	<u>\$-340</u>

DEPARTMENT OF ENERGY  
FY 1998 CONGRESSIONAL BUDGET REQUEST  
CONSTRUCTION PROJECT DATA SHEETS  
URANIUM PROGRAMS - PLANT AND CAPITAL EQUIPMENT  
(Tabular dollars in thousands. Narrative material in whole dollars.)

- |  |  |
|--|--|
| 1. Title and Location of Project: DUF <sub>6</sub> cylinder storage yards, K-25 Site,<br>Oak Ridge, Tennessee, and Paducah, Kentucky,<br>gaseous diffusion plant | 2a. Project No.: 98-U-200<br>2b. Construction Funded |
|--|--|
- 
- |   |  |
|---|--|
| 3a. Date A-E Work Initiated (Title I Design Start Scheduled): 3rd Qtr. FY 1998<br>3b. A-E Work (Title I & II) Duration: 6 months<br>4a. Date Physical Construction Starts: 2nd Qtr. FY 1999<br>4b. Date Construction Ends: 3rd Qtr. FY 2000 | 5. Previous Cost Estimate: None<br>Total Estimated Cost (TEC) -- \$0<br>Total Project Cost (TPC) -- \$0<br><br>6. Current Cost Estimate:<br>TEC -- \$ 5,600<br>TPC -- \$ 6,000 |
|---|--|

7. Financial Schedule (Federal Funds):

<u>Fiscal Year</u>	<u>Appropriations</u>	<u>Adjustments</u>	<u>Obligation</u>	<u>Costs</u>
1998	\$5,600 <sup>1</sup>	\$0	\$400	\$400
1999	\$0	\$0	\$5,200	\$3,000
2000	\$0	\$0	\$0	\$2,200

8. Project Description, Justification, and Scope:

The mission of this project is to provide safe long-term storage of DUF<sub>6</sub> tails cylinders until eventual disposition.

The K-25 Site has stored DUF<sub>6</sub> cylinders outdoors during the past 40 years. Recent inspection of the storage conditions discovered areas of poor drainage and cylinder-ground contact. Poor storage conditions are major contributors to accelerated deterioration of the external cylinder surfaces. Breached cylinders have been discovered indicating that actions need to be taken to prevent further degradation of the cylinders.

This project will provide for construction of a new DUF<sub>6</sub> cylinder storage yard at either Oak Ridge, Tennessee, or Paducah, Kentucky. The new storage yard, approximately four paved acres in size, will replace the existing K-1066-K cylinder storage yard and includes: a well-drained, paved concrete yard; capability for storing approximately 3,000 cylinders with adequate spacing for cylinder handling and inspections; a stormwater detention basin; stormwater management system (e.g., a stormwater diversion ditch, pavement underdrain system,

---

<sup>1</sup> Reflects full up-front funding for construction projects, in accordance with the Administration's new policy. Funding will be provided in the Energy Asset Acquisition appropriation.

and tie-ins to the existing storm drain system); fencing; relocation of a portion of an existing road and yard lighting.

The site for the new DUF<sub>6</sub> cylinder storage yard is yet to be determined. Final site selection will be determined by the Programmatic Environmental Impact Statement for DUF<sub>6</sub> cylinders.

# CONSTRUCTION PROJECT DATA SHEETS

1.	Title and Location of Project:	DUF <sub>6</sub> cylinder storage yards, K-25 Site, Oak Ridge, Tennessee, and Paducah, Kentucky, gaseous diffusion plant	2a.	Project No.: 98-U-200
			2b.	Construction Funded

9. <u>Details of Cost Estimate:</u>		<u>Item Cost</u>	<u>Total Cost</u>
a.	Design and Management Costs .....		\$ 1,400
1.	Engineering design and inspection at approximately 12 percent of items c through f below (Design, Drawings, and Specifications: <u>\$200</u> ).....	\$ 400	
2.	Construction management costs at approximately 15 percent of items c through f below .....	500	
3.	Project management at approximately 15 percent of items c through f below .....	500	
b.	Land and land rights.....		0
c.	Construction costs.....		3,350
1.	Improvements to land.....	200	
2.	Buildings.....	0	
3.	Other structures.....	2,400	
4.	Utilities.....	350	
5.	Special facilities.....	400	
d.	Standard equipment.....		0
e.	Major computer items.....		0
f.	Removal cost less salvage.....		0
g.	Design and project liaison, testing, checkouts and acceptance.....		<u>50</u>
h.	Subtotal (a. through g.).....		4,800
i.	Contingencies at approximately 17 percent of above costs.....		<u>800</u>
j.	Total line item cost (Section 11.a 1. (a)).....		5,600
k.	LESS: Non-Federal Contribution.....		<u>0</u>
l.	Net Federal total estimated cost (TEC).....		<u><u>\$ 5,600</u></u>

## 10. Method of Performance:

The DOE Oak Ridge Operations Office will provide overall project management.

Design and inspection will be performed under negotiated architect-engineer contract and by the operating contractor. To the extent feasible, construction and procurement will be accomplished by fixed-price contracts and subcontracts awarded on the basis of competitive bidding administered by the construction manager.

# CONSTRUCTION PROJECT DATA SHEETS

1.	Title and Location of Project:	DUF <sub>6</sub> cylinder storage yards, K-25 Site, Oak Ridge, Tennessee, and Paducah, Kentucky, gaseous diffusion plant	2a.	Project No.: 98-U-200
			2b.	Construction Funded

## 11. Schedule of Project Funding and Other Related Funding Requirements:

	<u>Previous Years</u>	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>Outyears</u>	<u>Total</u>
a. Total project costs						
1. Total facility costs						
(a) Line item (Section 9.j)	\$ 0	\$ 0	\$ 0	\$ 400	\$ 5,200	\$ 5,600
(b) Plant engineering & design	0	0	0	0	0	0
(c) Oper. exp. funded equipment	0	0	0	0	0	0
(d) Inventories	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total facility cost (Federal and Non-Federal)	\$ 0	\$ 0	\$ 0	\$ 400	\$ 5,200	\$ 5,600
2. Other project costs						
(a) R&D necessary to complete project	0	0	0	0	0	0
(b) Conceptual design costs	0	30	0	0	0	30
(c) Decontamination & Decommissioning (D&D)	0	0	0	0	0	0
(d) NEPA documentation costs	0	0	70	0	0	70
(e) Other project-related costs	<u>0</u>	<u>0</u>	<u>0</u>	<u>200</u>	<u>100</u>	<u>300</u>
(f) Total other project costs	<u>0</u>	<u>30</u>	<u>70</u>	<u>200</u>	<u>100</u>	<u>400</u>
(g) Total project costs	0	30	70	600	5,300	6,000
(h) LESS: Non-Federal contribution	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
(i) Net Federal total project cost (TPC)	<u>\$ 0</u>	<u>\$ 30</u>	<u>\$ 70</u>	<u>\$ 600</u>	<u>\$ 5,300</u>	<u>\$ 6,000</u>
b. Related annual funding (estimated life of project--25 years)						
1. Facility operating costs.....						\$ 150
2. Facility maintenance and repair costs.....						0
3. Programmatic operating expenses directly related to the facility.....						0
4. Capital equipment not related to construction but related to the programmatic effort in the facility.....						0
5. GPP or other construction related to the programmatic effort in the facility.....						0
6. Utility costs.....						20
7. Other costs.....						<u>0</u>
Total related annual funding.....						<u>\$ 170</u>

## CONSTRUCTION PROJECT DATA SHEETS

- 
- |    |                                |  |     |                       |
|----|--------------------------------|--|-----|-----------------------|
| 1. | Title and Location of Project: | DUF <sub>6</sub> cylinder storage yards, K-25 Site,<br>Oak Ridge, Tennessee, and Paducah, Kentucky,<br>gaseous diffusion plant | 2a. | Project No.: 98-U-200 |
|    |                                |  | 2b. | Construction Funded   |
- 

12. Narrative Explanation of Total Project Funding and Other Related Funding Requirements:

a. Total project costs

1. Total facility costs

- (a) Line item (Section 11) -- Costs for design, procurement, and construction of the DUF<sub>6</sub> cylinders and storage yards are estimated to be \$5,600,000.
- (b) Plant engineering & design -- No narrative required.
- (c) Operating expense funded equipment -- No narrative required.
- (d) Inventories -- No narrative required.

2. Other project costs

- (a) R&D necessary to complete project -- No narrative required.
- (b) Conceptual design costs -- A conceptual design report was completed in May 1996 at a cost of \$30,000.
- (c) Decontamination and Decommissioning (D&D) -- No narrative required.
- (d) NEPA documentation costs -- The NEPA for this project is expected to require a NEPA-Environmental Assessment. Estimated cost is \$70,000.
- (e) Other project-related costs -- VE Studies, Safety Assessments, QA Plan, Site Characterization, Geotechnical Survey, Design Criteria, Readiness Review activities and other miscellaneous supporting and project documentation will be proposed for \$300,000. The programmatic operating expenses directly related to the facility included incremental management required for the operation of the K-1066-K DUF<sub>6</sub> cylinder storage yard and the annual expenses of cylinder handling in this yard.
- (f) Non-Federal contribution -- No narrative required.

b. Related annual funding

- 1. Facility operating costs -- The estimated cost of opening a DUF<sub>6</sub> cylinder yard is minimal, however, the stormwater collection detention pond will require periodic sampling, testing, and release of the rain water from the pond to Storm Drain/KPDES outfall. This cost is estimated at \$150,000 annually and should only require one employee periodically.
- 2. Facility maintenance and repair costs -- No narrative required.



CONSTRUCTION PROJECT DATA SHEETS

---

1.	Title and Location of Project:	DUF <sub>6</sub> cylinder storage yards, K-25 Site, Oak Ridge, Tennessee, and Paducah, Kentucky, gaseous diffusion plant	2a.	Project No.: 98-U-200
			2b.	Construction Funded

---

12. Narrative Explanation of Total Project Funding and Other Related Funding Requirements (Continued):

3. Programmatic operating expenses directly related to the facility -- No narrative required.
4. Capital equipment not related to construction but related to the programmatic effort in the facility -- No narrative required.
5. GPP or other construction related to the programmatic effort in the facility -- No narrative required.
6. Utility costs -- The cylinder yard will require electrical service estimated at \$20,000 per year.
7. Other costs -- No narrative required.

DEPARTMENT OF ENERGY  
FY 1998 CONGRESSIONAL BUDGET REQUEST  
CONSTRUCTION PROJECT DATA SHEETS  
URANIUM PROGRAMS - PLANT AND CAPITAL EQUIPMENT  
(Tabular dollars in thousands. Narrative material in whole dollars.)

---

1.	Title and Location of Project:	DUF6 cylinder storage yards, Paducah, Kentucky, gaseous diffusion plant	2a.	Project No.: 96-U-201
			2b.	Construction Funded

---

SIGNIFICANT CHANGES

- Budget request reflects Administration's new policy to provide up-front funding for fixed assets.

DEPARTMENT OF ENERGY  
FY 1998 CONGRESSIONAL BUDGET REQUEST  
CONSTRUCTION PROJECT DATA SHEETS  
URANIUM PROGRAMS - PLANT AND CAPITAL EQUIPMENT  
(Tabular dollars in thousands. Narrative material in whole dollars.)

1. Title and Location of Project: DUF6 cylinder storage yards, Paducah, Kentucky,  
gaseous diffusion plant

2a. Project No.: 96-U-201  
2b. Construction Funded

3a. Date A-E Work Initiated (Title I Design Start Scheduled): 2nd Qtr. FY 1996

5. Previous Cost Estimate:  
Total Estimated Cost (TEC) -- \$23,700  
Total Project Cost (TPC) -- \$28,325

3b. A-E Work (Title I & II) Duration: 15 months

4a. Date Physical Construction Starts: 4th Qtr. FY 1996

6. Current Estimate:  
TEC \$23,700  
TPC \$28,325

4b. Date Construction Ends: 4th Qtr. FY 2000

7. Financial Schedule (Federal Funds):

<u>Fiscal Year</u>	<u>Appropriations</u>	<u>Adjustments</u>	<u>Obligations</u>	<u>Costs</u>
1996	\$ 3,000 <sup>1</sup>	\$ 0	\$ 3,000	\$ 600
1997	4,000 <sup>1</sup>	0	4,000	6,000
1998	16,700 <sup>2</sup>	0	6,000	4,700
1999	0	0	8,000	8,700
2000	0	0	2,700	3,700

8. Project Description, Justification, and Scope:

This project will provide the design and construction of a new depleted uranium hexafluoride (DUF6) cylinder storage yard of approximately 465,000 square feet, designated C-745-T, and the renovation of C-745-K, L, M, N, and P cylinder storage yards from gravel to concrete. This project will entail designing and constructing several reinforced concrete haul roads, updated and centrally powered lighting fixtures, improved drainage, and extension of the existing patrol road and security fence.

The mission of this project is to provide safe long-term storage of DUF6 cylinders until eventual disposition.

C-745-T yard is necessary due to the overcrowding of cylinders in existing Department of Energy (DOE) cylinder yards. Past practices of stacking cylinders in as tight a configuration as possible has led to several breaches due to lifting lug impingement and does not allow room for adequate visual inspection of cylinders. Current stacking requirements are designed to allow for better inspections and do not allow cylinder lifting lug impingement on adjacent side or top row cylinders. Additionally, C-745-T is large enough to allow relocation of all DOE cylinders from C-745-A, B, and C yards. C-745-A and B are leased to the United States Enrichment Corporation (USEC), and C-745-C is a

<sup>1</sup> Funded under Uranium Supply and Enrichment Activities appropriation in FY 1996 and FY 1997.

<sup>2</sup> Funded under Energy Asset Acquisition appropriation.

very old yard, with cylinders stored in single rows on concrete pylons with wood chocks. It has poor-to-no drainage, and would be difficult to upgrade.

#### CONSTRUCTION PROJECT DATA SHEETS

- 
- |    |                                |  |     |                       |
|----|--------------------------------|--|-----|-----------------------|
| 1. | Title and Location of Project: | DUF6 cylinder storage yards, Paducah, Kentucky,<br>gaseous diffusion plant | 2a. | Project No.: 96-U-201 |
|    |                                |  | 2b. | Construction Funded   |
- 

8. Project Description, Justification, and Scope (Cont'd):

Relocating these cylinders to C-745-T has the added benefit of having all DOE cylinders stored in the same central cylinder storage area on concrete saddles, and on new well-drained concrete yards. Due to space limitations for the temporary storage of cylinders in the yards being renovated, C-745-T must be constructed before any work can begin in C-745-K, L, M, N, or P yards.

C-745-K, L, M, N, and P are newer gravel yards, some with improved drainage; however, cylinder handling traffic in these gravel yards continuously degrade them, destroys the drainage and allows the cylinder chocks to settle which put cylinders in contact with the ground and increases corrosion. The yards shall be constructed per the standard Paducah Gaseous Diffusion Plant (PGDP) 11 inch unreinforced concrete pad with adjacent and bisecting reinforced concrete haul roads for cylinder handling traffic.

The extensive storm water runoff drainage system will drain and collect all the rainwater from each of the yards into an existing retention/detention pond where it can be sampled and monitored before release to DOE-permitted outfall Kentucky Pollutant Discharge Elimination System (KPDES) 17. Currently, the cylinder yards do not drain well and often have standing water in them above the level of the cylinder bottoms after storms. Additionally, the current cylinder yards drain to five different outfalls of which only one is DOE permitted. The flows into outfall KPDES 17 should be directly attributable to the cylinder yards.

With the completion of these concrete yards, reinforced concrete haul roads, improved lighting and drainage the DOE DUF6 cylinders at PGDP will be in a stabilized condition for continued safe long-term storage.

# CONSTRUCTION PROJECT DATA SHEETS

1. Title and Location of Project: DUF6 cylinder storage yards, Paducah, Kentucky,  
gaseous diffusion plant

2a. Project No.: 96-U-201  
2b. Construction Funded

9. <u>Detail of Cost Estimate:</u>	<u>Item Cost</u>	<u>Total Cost</u>
a. Design and Management Costs.....		\$ 3,310
1. Engineering design and inspection at approximately 3.3 percent of construction costs, Item c (Design, Drawing, and Specifications estimated at \$272,000).....	\$ 552	
2. Construction management costs at approximately 11.0 percent of Item c.....	1,806	
3. Project management at approximately 5.8 percent of (Item c).....	952	
b. Land and land rights.....		0
c. Construction costs.....		16,463
1. Improvements to land.....	12,239	
2. Buildings.....	0	
3. Construction support.....	3,100	
4. Utilities.....	1,124	
5. Special facilities.....	0	
d. Standard equipment.....		0
e. Major computer items.....		0
f. Removal cost less salvage.....		0
g. Design and project liaison, testing checkout and acceptance.....		80
h. Subtotal (a. through g.).....		19,853
i. Contingencies at approximately 19.4 percent of above costs.....		3,847
j. Total line item cost (Section 11. a 1. (a)).....		23,700
k. LESS: Non-Federal Contribution.....		0
l. Net Federal total estimated cost (TEC).....		\$ 23,700

# CONSTRUCTION PROJECT DATA SHEETS

1. Title and Location of Project: DUF6 cylinder storage yards, Paducah, Kentucky,  
gaseous diffusion plant

2a. Project No.: 96-U-201  
2b. Construction Funded

## 10. Method of Performance:

DOE Oak Ridge Operations (OR) will manage the project, with the negotiated architect-engineer (A-E) contractor providing Title I and II site specific design and specific Title III as-built drawing support. The operating contractor will provide A-E support, project integration, site project management, and Title III inspection of construction. The construction manager and its fixed price subcontractors (FPSCs) will perform all major construction activities. The operating contractor will perform all process and utility tie-ins, and interfacing to the existing operations.

## 11. Schedule of Project Funding and Other Related Funding Requirements:

	Previous Years	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	Total
a. Total project costs							
1. Total facility costs							
(a) Line item (Section 9.j)	\$ 0	\$ 600	\$ 6,000	\$ 4,700	\$ 8,700	\$ 3,700	\$ 23,700
(b) Oper. exp. funded equipment	0	0	0	0	0	0	0
(c) Plant & Engineering Design	0	0	0	0	0	0	0
(d) Inventories	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total facility cost (Federal and Non-Federal)	\$ 0	\$ 600	\$ 6,000	\$ 4,700	\$ 8,700	\$ 3,700	\$ 23,700
2. Other project costs							
(a) R&D necessary to complete project	0	0	0	0	0	0	0
(b) Conceptual design costs	120	0	0	0	0	0	120
(c) Decontamination & Decommissioning (D&D)	0	0	0	0	0	0	0
(d) NEPA documentation costs	23	187	0	0	0	0	210
(e) Other project-related costs	<u>27</u>	<u>153</u>	<u>0</u>	<u>823</u>	<u>823</u>	<u>2,469</u>	<u>4,295</u>
(f) Total other project costs	<u>170</u>	<u>340</u>	<u>0</u>	<u>823</u>	<u>823</u>	<u>2,469</u>	<u>4,625</u>
(g) Total project costs	170	940	6,000	5,523	9,523	6,169	28,325
(h) Non-Federal contribution	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
(i) Net Federal total project cost (TPC)	\$ 170	\$ 940	\$ 6,000	\$ 5,523	\$ 9,523	\$ 6,169	\$28,325

## CONSTRUCTION PROJECT DATA SHEETS

---

1. Title and Location of Project:	DUF6 cylinder storage yards, Paducah, Kentucky, gaseous diffusion plant	2a. Project No.: 96-U-201
		2b. Construction Funded

---

11. Schedule of Project Funding and Other Related Funding Requirements (Cont'd):

b.	Related annual funding (estimated life of project--25 years)	
1.	Facility operating costs.....	\$ 150
2.	Facility maintenance and repair costs.....	0
3.	Programmatic operating expenses directly related to the facility.....	0
4.	Capital equipment not related to construction but related to the programmatic effort in the facility.....	25
5.	GPP or other construction related to the programmatic effort in the facility.....	0
6.	Utility costs.....	50
7.	Other costs.....	0
	Total related annual funding.....	\$ 225

12. Narrative Explanation of Total Project Funding and Other Related Funding Requirements:

- a. Total project costs
  - 1. Total facility costs
    - (a) Line item (Section 9.j) -- Construction Line Item costs for engineering, procurement, and construction of DUF6 cylinder storage yards project are estimated to be \$23,700,000.
    - (b) Expense funded equipment -- No narrative required.
    - (c) Plant & Engineering Design -- No narrative required.
    - (d) Inventories -- No narrative required.
  - 2. Other project costs
    - (a) R&D necessary to complete project -- No narrative required.
    - (b) Conceptual design costs -- To identify a Uranium Programs DUF6 cylinder storage yard, project for PGDP, a Conceptual Design Report was approved by DOE in May 1995 for \$120,000.
    - (c) Decontamination and Decommissioning (D&D) -- No narrative required.
    - (d) NEPA documentation costs -- The construction of C-745-T Cylinder Storage Yard is expected to require a NEPA-Environmental Assessment. Estimated cost is \$150,000.

The renovation of C-745-K, L, N, and P are expected to require a NEPA-Categorical Exclusion. Estimated cost is \$60,000.

## CONSTRUCTION PROJECT DATA SHEETS

---

1. Title and Location of Project:	DUF6 cylinder storage yards, Paducah, Kentucky, gaseous diffusion plant	2a. Project No.: 96-U-201
		2b. Construction Funded

---

12. Narrative Explanation of Total Project Funding and Other Related Funding Requirements (Cont'd):

(e) Other project-related costs -- Value Engineering Studies, Safety Assessments, Quality Assurance Plan, Site Characterization, Geotechnical Survey, and other miscellaneous supporting and project documentation will be prepared for \$180,000. The programmatic operating expenses directly related to the facility included incremental management required for the operation of the C-745-G UF6 Cylinder Storage Yard and the annual expenses of cylinder movement and restacking in these yards. The cylinder movement and restacking from C-745-A, B, and C to C-745-T, and the movement between C-745-T and C-745-K, L, M, N, and P is estimated at \$823,000 per year for the first five years starting in 1998. After 2003, all DOE cylinders will be located in the proper new concrete yards and should be stacked correctly.

(f) Non-Federal contribution -- No narrative required.

b. Related annual funding

1. Facility operating costs --The estimated cost of opening C-745-G UF6 Cylinder Yard is minimal, however the storm water collection retention/detention pond will require periodic sampling, testing, and release of the rain water from the pond to KPDES outfall 17. This cost is estimated at \$150,000 annually and should only require one employee periodically.
2. Facility maintenance and repair costs -- No narrative required.
3. Programmatic operating expenses directly relating to the facility -- No narrative required.
4. Capital equipment not related to construction but related to the programmatic effort in the facility -- Capital equipment purchases estimated at \$25,000 for additional or upgraded UF6 trailers may be necessary to support the movement of cylinders from C-745-A, B, and C to C-745-T.
5. GPP or other construction related to the programmatic effort of the facility -- No narrative required.
6. Utility costs -- The cylinder yard will require electrical service estimated at \$50,000 per year.
7. Other costs -- No narrative required.



DEPARTMENT OF ENERGY  
FY 1998 CONGRESSIONAL BUDGET REQUEST  
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT  
(Tabular dollars in thousands, Narrative in whole dollars)

NUCLEAR ENERGY R&D  
PROGRAM DIRECTION

I. Mission Supporting Goals/Ongoing Responsibilities

The Program Direction account is comprised mostly of salary and benefits funding for Headquarters and Operations Office personnel providing technical direction to Nuclear Energy Research and Development activities, as well as energy research reactor operations (which are funded by the Office of Energy Research), transition activities at the Fast Flux Test Facility (FFTF), the critical U. S. Government activity to cooperate with the countries of the former Soviet Union and Central and Eastern Europe to enhance nuclear safety (which is funded in the Other Defense Activities Appropriation) and activities funded by other Federal agencies and foreign governments. This account also includes funding for travel and other related administrative expenses, such as: training, computer hardware and software acquisitions, modifications, and other telecommunications services for work stations. In FY 1997, the Department's central administrative office established a Working Capital Fund to provide funding for mandatory administrative costs, such as rent and utilities. This fund is continued in the FY 1998 budget. Previously, these costs were included in the DOE's Departmental Administration Appropriation. In FY 1997, salaries and benefits for two overseas personnel working on international safety and technology collaboration issues were transferred to the Office of Nuclear Energy, Science and Technology (NE). In FY 1998, NE will assume full responsibility, including housing, miscellaneous expenses, and Foreign Affairs Administrative Services.

NE Headquarters has aggressively streamlined operations. On-board staff have been reduced from 258 in August 1993 to a current level of 135 (a 48 percent reduction). The Office is also meeting other streamlining goals. For example, senior executive and GS 15/14 positions have been reduced by 49 percent; the employee to supervisor ratio has been increased from 3:1 to 13:1; overall NE Headquarters travel has been reduced by about 30 percent from FY 1995 and NE Headquarters support services contracting has been reduced by about 40 percent from FY 1995.

II. Funding Table

	FY 1996 Current <u>Appropriation</u>	FY 1997 Original <u>Appropriation</u>	FY 1997 <u>Adjustments</u>	FY 1997 Current <u>Appropriation</u>	FY 1998 Budget <u>Request</u>
<u>Summary - Budget</u>					
Headquarters-Program Direction <sup>1</sup>	\$ 4,314	\$ 11,960	\$ 0	\$ 11,960	\$ 13,406
Headquarters-Policy and Management <sup>1</sup>	5,000	0	0	0	0
Field	<u>3,686</u>	<u>2,840</u>	<u>0</u>	<u>2,840</u>	<u>3,294</u>
<b>NEW BUDGET AUTHORITY</b>	<b><u>\$ 13,000</u></b>	<b><u>\$ 14,800</u></b>	<b><u>\$ 0</u></b>	<b><u>\$ 14,800</u></b>	<b><u>\$16,700</u></b>
Prior Year Balances Available	4,040	1,796	0	1,796	0
Less Balances Carried Forward	<u>- 1,796</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
<b>TOTAL AVAILABLE BUDGET</b>	<b><u>\$ 15,244</u></b>	<b><u>\$ 16,596</u></b>	<b><u>\$ 0</u></b>	<b><u>\$ 16,596</u></b>	<b><u>\$ 16,700</u></b>

II. Funding Table - continued

	FY 1996 Current <u>Appropriation</u>	FY 1997 Original <u>Appropriation</u>	FY 1997 <u>Adjustments</u>	FY 1997 Current <u>Appropriation</u>	FY 1998 Budget <u>Request</u>
<u>Summary - Strategic Alignment Staffing</u>					
<u>Targets</u>					
Headquarters End of Year Staffing					
<b>Program Direction</b>	<b>114</b>	<b>103</b>		<b>103</b>	<b>87</b>
Isotope Prod. and Dist.	9	9		9	11
Uranium Programs	<u>16</u>	<u>16</u>		<u>16</u>	<u>17</u>
TOTAL,	139	128		128	115
HEADQUARTERS					
 Field End of Year Staffing					
<b>Program Direction</b>	<b>31</b>	<b>29</b>		<b>29</b>	<b>30</b>
Isotope Prod. and Dist.	1	1		1	1
Uranium Programs	<u>35</u>	<u>29</u>		<u>29</u>	<u>27</u>
TOTAL, FIELD	67	59		59	58
 <u>Detailed Breakout</u>					
<u>Chicago</u>					
Salary and Benefits	\$ 1,170	\$ 1,062	\$ 0	\$ 1,062	\$ 1,275
Travel	50	53	0	53	50
Support Services	25	25	0	25	25
Other Related Expenses	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	\$ 1,245	\$ 1,140	\$ 0	\$ 1,140	\$ 1,350
End of Year Staffing	12	11		11	12
 <u>Idaho</u>					
Salary and Benefits	\$ 90	\$ 92	\$ 0	\$ 92	\$ 100
Travel	10	8	0	8	10
Support Services	0	0	0	0	0
Other Related Expenses	<u>5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>5</u>
Total	\$ 105	\$ 100	\$ 0	\$ 100	\$ 115
End of Year Staffing	1	1		1	1

II. Funding Table - continued

	FY 1996 Current <u>Appropriation</u>	FY 1997 Original <u>Appropriation</u>	FY 1997 <u>Adjustments</u>	FY 1997 Current <u>Appropriation</u>	FY 1998 Budget <u>Request</u>
<u>Oak Ridge</u>					
Salary and Benefits	\$ 1,020	\$ 824	\$ 0	\$ 824	\$ 880
Travel	59	25	0	25	59
Support Services	182	101	0	101	130
Other Related Expenses	<u>43</u>	<u>40</u>	<u>0</u>	<u>40</u>	<u>45</u>
Total	\$ 1,304	\$ 990	\$ 0	\$ 990	\$ 1,114
End of Year Staffing	10	10		10	10
<u>Oakland</u>					
Salary and Benefits	\$ 450	\$ 85	\$ 0	\$ 85	\$ 100
Travel	30	6	0	6	15
Support Services	25	0	0	0	25
Other Related Expenses	<u>15</u>	<u>9</u>	<u>0</u>	<u>9</u>	<u>15</u>
Total	\$ 520	\$ 100	\$ 0	\$ 100	\$ 155
End of Year Staffing	2	1		1	1
<u>Richland</u>					
Salary and Benefits	\$ 495	\$ 490	\$ 0	\$ 490	\$ 540
Travel	17	20	0	20	20
Support Services	0	0	0	0	0
Other Related Expenses	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	\$ 512	\$ 510	\$ 0	\$ 510	\$ 560
End of Year Staffing	6	6		6	6

## II. Funding Table - continued

	FY 1996 Current <u>Appropriation</u>	FY 1997 Original <u>Appropriation</u>	FY 1997 <u>Adjustments</u>	FY 1997 Current <u>Appropriation</u>	FY 1998 Budget <u>Request</u>
<u>Headquarters</u>					
Salary and Benefits	\$ 11,285	\$ 10,560	\$ 0	\$ 10,560	\$ 9,900
Travel	474	379	0	379	379
Support Services	40	86	0	86	86
Other Related Expenses	<u>1,555</u>	<u>2,731</u>	<u>0</u>	<u>2,731</u>	<u>3,041</u>
Total	\$ 13,354	\$ 13,756	\$ 0	\$ 13,756	\$ 13,406
End of Year Staffing	114	103		103	87
Less Balances Carried Forward	- 1,796	0	0	0	0
TOTAL AVAILABLE BUDGET	<u>\$ 15,244</u>	<u>\$ 16,596</u>	<u>\$0</u>	<u>\$ 16,596</u>	<u>\$ 16,700</u>
Less Net Use of Prior Year Balances	<u>-2,244</u>	<u>- 1,796</u>	<u>0</u>	<u>-1,796</u>	<u>0</u>
NEW BUDGET AUTHORITY	<u>\$ 13,000</u>	<u>\$ 14,800</u>	<u>0</u>	<u>\$ 14,800</u>	<u>\$ 16,700</u>

## III. Performance Summary

### FY 1996 Measurable Performance Activities:

The key benchmarks by which NE measured its FY 1996 streamlining performance are:

- Reduced Headquarters staff to 144 (a 44 percent reduction since FY 1993), compared to a 28 percent reduction in program budgets
- Reduced senior executive positions to six (a 73 percent reduction since FY 1993) and reduced senior grade level (SES/15/14) positions by 44% since FY 1993
- Exceeded National Performance Review (NPR) streamlining goals to reduce administrative positions by 50 percent
- Increased the employee to supervisor ratio to 13:1
- Reduced Headquarters travel by about 30 percent from FY 1995 level
- Reduced reliance on support service contracts by about 40 percent from FY 1995 level

#### FY 1997 Measurable Performance Activities:

The key benchmarks by which NE will measure its FY 1997 streamlining performance are:

- Reducing senior executive positions to six (a 73 percent reduction since FY 1993), and reducing senior grade level (SES/15/14) positions by 52 percent since FY 1993
- Continuing to exceed National Performance Review streamlining goals to reduce administrative positions by 50 percent
- Exceeding DOE employee to supervisor ratio target of 11:1
- Continuing to reduce reliance on support service contractors by about 40 percent and to reduce Headquarters travel by about 30 percent from FY 1995 levels
- Initiate funding for the mandated DOE Working Capital Fund for administrative costs, such as rent and utilities
- Provide funding for salaries and benefits for two overseas personnel working on international safety and technology collaboration issues

#### FY 1998 Measurable Performance Activities:

The key benchmark by which NE will measure its FY 1998 streamlining performance are:

- Reducing senior executive positions to six (a 73 percent reduction since FY 1993), and maintain overall reductions in senior grade level (SES/15/14) positions
- Continuing to exceed National Performance Review streamlining goals to reduce administrative positions by 50 percent
- Exceeding the DOE employee to supervisor ratio target of 11:1
- Continue funding the DOE Working Capital Fund
- Assume full funding responsibility for two overseas personnel working on international safety and technology collaboration issues

Explanation of Funding Changes FY 1997 Request to FY 1998:

• Increase to fully fund expenses for two overseas personnel	\$ + 1,000
• Salaries and benefits escalated in accordance with OMB guidance	\$ + 500
• Increased Operations Office expenses including additional FTE transferred from Waste Management for re-engineering initiative	\$ + 212
• Increase attributable to use of prior year unobligated carryover funding in FY 1997	<u>\$ + 188</u>
Total Funding Changes, Nuclear Energy R&D Program Direction	\$ + 1,900

NUCLEAR ENERGY R&D

Program Direction

Headquarters - Support Services  
(\$ in thousands)

<u>SUPPORT SERVICES-HQ</u>	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>Change</u>
Technical Support Services				
Environmental Analysis	\$ 40	\$ 0	\$ 0	\$ 0
Management Support Services				
Management Studies	<u>0</u>	<u>86</u>	<u>86</u>	<u>0</u>
 TOTAL SUPPORT SERVICES	 <u>\$ 40</u>	 <u>\$ 86</u>	 <u>\$ 86</u>	 <u>\$ 0</u>

# NUCLEAR ENERGY R&D

## Program Direction

### Headquarters - Other Related Expenses (\$ in thousands)

<u>OTHER RELATED EXPENSES</u>	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>CHANGE</u>
Working Capital Fund	\$ 0	\$ 1,775	\$ 1,400	\$ - 375
Support for Foreign Offices	0	0	1,000	+1,000
ADP/TeleVideo Hardware and Software Procurement/Maintenance	319	250	250	0
Minority Servicing Institutions	850	551	236	- 315
Subscriptions/Publications	65	50	50	0
Training	50	55	55	0
Other Miscellaneous Expenses	271	0	0	0
Office Logistical Support	<u>0</u>	<u>50</u>	<u>50</u>	<u>0</u>
TOTAL OTHER RELATED EXPENSES	<u>\$ 1,555</u>	<u>\$ 2,731</u>	<u>\$ 3,041</u>	<u>\$ + 310</u>